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REVIEW: IC-R8500

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Bob Bell tells why you need a hand-held scanner

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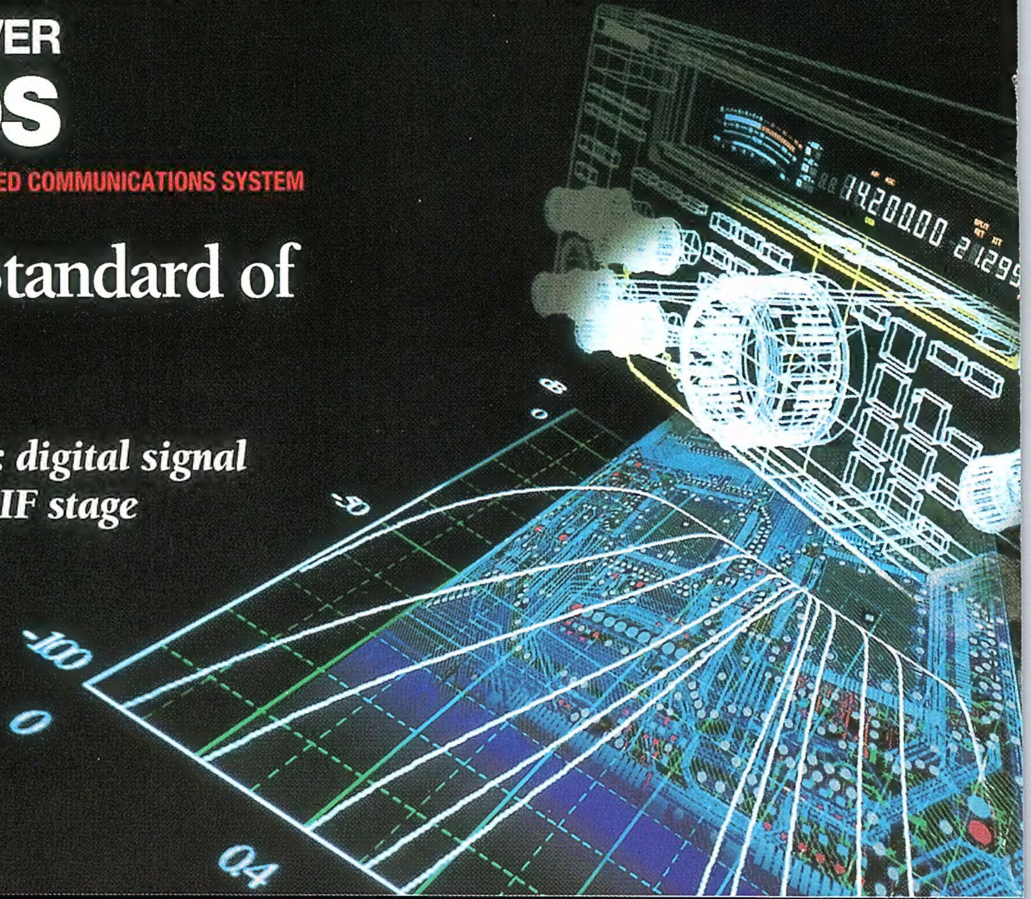

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OFFICE
73 Atherton Road, Oakleigh, Vic.

POSTAL
PO Box 119, Oakleigh, Vic 3166

TELEPHONE (03) 9567 4200

EDITOR
Len Shaw, VK3ALS
shawlen@werple.mira.net.au
Telephone/Fax: (03) 9775 2575
PO Box 622, Mount Eliza, VIC 3930

PRODUCTION EDITOR
Chris Edmondson, VK3CE/VJV33
email: vk3ce@tbsa.com.au / packet: vk3ce@vk3frs
Telephone/Fax: (03) 9722 9666
Box 1 Yarra Road, Wonga Park, VIC 3115

DISPLAY ADVERTISING
National Manager: Kate Shaw
Telephone/Fax: (03) 9752 6186
PO Box 698, Belgrave, Vic 3160

CONTRIBUTING EDITORS
INTERNET: Tom Sundstrom, W2XQ
email: trs@trsc.com
ONLINE / SCANNING: Michael Evans
email: michael@tbsa.com.au
AMATEUR DX / IOTA: Jim Smith, VK9NS
PO Box 90, Norfolk Island, South Pacific 2899
SHORTWAVE: Craig Seager
email: cseager@ix.net.au
MODIFICATIONS: Greg Towells, VK2GJT
email: vk2gjt@ix.net.au
HERE AND THERE: Paul Butler, VK3DBP
PO Box 42, Mentone, VIC 3194
SCAN SECRETS: Russell Bryant
PO Box 344, Springwood, NSW 2777
11M DX: Jack Haden, VK2GJH
PO Box 299, Ryde, NSW 2112
MILITARY SCAN: John Batty, VK4MBK,
PO Box 345, Nanango, Queensland 4615
AIR BAND: Bob Bell, VK2UTG
PO Box 16, Georges Hall, NSW 2198
WEATHER SATELLITES: Arthur Andrews
VK2AAE, 'Hazeldean', 30 Araluen Lane,
Wollar, NSW 2850
AMATEUR VHF/UHF: Chris Davis, VK1DO
123 Hawkesbury Court, Farrer, ACT 2607

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GET A HAND-HELD!!

According to In-Flight guru, Bob Bell, VK2UTG, there's only one scanner to consider — and that's one you can hold in your hand!

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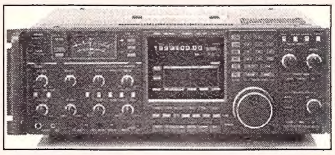
THE IDEAL MONITOR STATION EQUIPMENT

...But what if you don't *want* to hold all your gear in your hand? Simple. You buy the biggest, the best, the most expensive... and here is John Batty's wish list.



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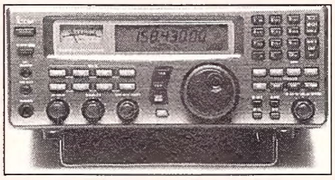
REVIEW: ICOM IC-R8500

...Or you could save ten grand or so and consider this all-new comms receiver from Icom. It covers DC to daylight — literally!



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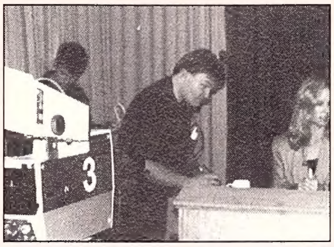
GLADESVILLE – RADIO CLUB OR TV STATION?

The Gladesville amateur radio club has been setting a very good example for other clubs to emulate. Let me *show* you, sir...



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Here's a last-minute report about the huge DXpedition to Heard Is.

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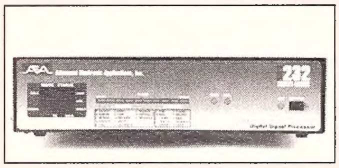
Paul Butler, VK3DBP, checks out the latest DSP-equipped multi-mode TNC. This one's from AEA.



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DIGITAL... WHAT?

Geoff Arnold grew up with valves. These he could understand. But then the world went digital. Uh-oh...

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REVIEW: BENELEC'S 24-ELEMENT DISCONE

We've often told you that even the greatest radios are useless without effective antennas. So try this one.

Sorry, but the audio filter project advertised on this month's cover has had to be held over until next month. Apologies...

Don't miss our February issue — it's out January 29!

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Editorial Comments...

We recently had occasion to spend a few days in Sydney and, naturally enough, elected to take along a few (quite a few, actually) radios, scanners and the like. The visit was partly pleasure, partly business and, naturally enough, we called in on a few of our writers and advertisers while we were there.

One of these was the all-new Dick Smith Electronics Power House at Bankstown, a relatively new venture which is following the trend to really huge warehousing — in this case stocking an enormous variety of consumer electronics, including amateur and CB transceivers, scanners and receivers.

It's an interesting concept, and we'll present a full report on it in the next issue.

Time was also spent at GME-Electrophone, the home of Aussie designed and built CB (and other) rigs, and there will also be a piece coming up on this pretty soon.

Yet another 'scoop' (for us, anyway), is an interview with Mr Dick Smith, VK2DIK, the man who started Dick Smith Electronics way back when, and has since gone on to become an adventurer, publisher, pilot, businessman... you name it and he's either done it or is in the process or organising it. Now that *will* make an interesting read...

Back to all those radios packed up to check out the Sydney communications scene. You know what it's like packing the bag for a domestic flight... basically, you leave everything at home. So how little could we take and still achieve something? First in was the hand-held scanner, of course. How else could I listen to everything going on around me? (And *what* a buzz, QSYing from aircraft channel to channel as we passed from one controller to the next!)

Next item into the bag was the dual-band HT. If I couldn't carry one of them I wouldn't be going. Full stop. And I figured a town as big as Sydney would see a lot of activity on 23cm, so a handie for that band went in as well. Six metres is big talk at this time of year, so the next item would see me active on six as well. There's bound to be a lot of UHF CB activity in a town as big as that, too, so in went yet another trusty HT.

Then, as I would be hiring a car to get around town, I'd need a 50 watt dual-band amateur rig, power cable and magnetic base antenna. That lot went in as well. So which rig did I choose? A Yaesu FT-8500, which I programmed from the PC with every Sydney repeater channel I could find before leaving home. In its review, I may have knocked the rig for having a thorny user interface, but a better-performing dual-band mobile radio would be hard to find.

The antenna needed to fit into my compact case, too, so I chose a very short one from my collection. It has a compact magnet and an overall length of under 20 inches, the same as a two metre quarter-wave whip. A coil in the middle gives good 70cm performance as well, by making the antenna electrically a quarter-wavelength long on each band.

But ohmigosh! What happened? After setting off every security alarm within half a mile of the airport, I discovered that Sydney is an RF sewer! A radio which I had confidently dubbed as "virtually pager-proof" had a *ghastly* time on two metres. The 146.800MHz repeater, which seems the only repeater even reasonably active there, was continually wiped out by pagers. Not just 'affected'. My receiver was wiped out. Completely. Wherever I went.

The Sydney RF soup is easily explained. In Melbourne, which is reasonably flat with a few good-sized mountains within easy reach, a commercial user can completely blanket the whole of town with just two or three strategically-sited UHF base transmitters. In bumpy Sydney, you need more like eight to 12 UHF sites to achieve a vaguely comparable result. Melbourne's commercial TV stations run 100kW video erp, with highly directional antennas to limit their coverage. In Sydney the figure is 1MW — a million watts erp — and even with 10 times the power the coverage is pretty crook. So crook, in fact, that the UHF TV band is also filled with signals, simply trying to bring some sort of coverage to some of the lower-lying areas.

I spent the night at a lovely little pub in Artarmon, bloody nearly underneath one of the TV transmission masts. It, like everything else in the area, was festooned with commercial antennas as well, and every available high spot had more of them. No wonder my radios were groaning! I couldn't help but wonder how your health would be if you remained long-term in that environment.

My suite was on the top floor of the hotel. The view from the sixth floor was magnificent in just about all directions, and with all those HTs I cracked no fewer than 30 repeaters from right inside my room! (Which reminds me. I'm dead sure there's a whole heap of them *not* listed in the guide on pages 96 and 97 of this issue. Would someone, *anyone*, please send me the right information so we can share it around?)

The silly thing was that, even in mid-evening, I couldn't get a response on even *one* repeater. Not a taker anywhere. What's the point putting so many of the damned things on the air if you won't *talk* to anybody? I finally scored my first 70cm Sydney contact a day later on my way to the airport — my first and last in the time I was there.

Driving around town the next day I called for quite some time on 146.800MHz, having finally rung a friend in disgust to ask where I might actually *talk* to someone. Even then, I finally had to identify myself as being from this magazine on air and threaten to write a nasty editorial if I didn't get a reply! (Yep, that worked all right...)

In the end, I chatted for quite some time to an interesting group of people. What we were talking about most of the time, though, was my quite genuine shock at the effect all that loose RF was having on the tortured radio.

I have to tell you that I was truly shocked by the appalling performance of the radio gear in Sydney. No wonder people leave their rigs turned off! Had I known what it's *really* like up there I would have carried the ancient but effective Jenlex pager filter with me. This gadget, and others like it, can virtually completely notch out any sign of those rotten pager transmissions, and make your day a lot less stressful. (And yes, for those who asked, they *are* still available in selected dealerships.)

Perhaps the ultimate torture test for any new two metre amateur transceiver should include a quick drive (well, a slow crawl anyway) around the streets of Sydney, with Artarmon the focal point of the drive!

Oh well, at least six metres and 23cm were quiet. Too quiet, actually. No contacts whatever between arrival on Thursday morning and departure on Friday night. Where were you, everybody? The FT-8500 coped well on UHF, despite wetting its nappy on two metres with the pagers. Not once did I hear any UHF breakthrough, even when driving through the middle of the city. Top marks there...

What I'm wondering about now, and would really like some answers to, is this: how would a radio which falls to bits here in comparatively quiet Melbourne do in Sydney? Would it go bang? And why is the operation so different in Sydney compared to Melbourne? Our repeaters, by way of comparison, are alive, all the way from six metres to 23cm. And you can find quite a bit of simplex activity just about any time of the day.

Not to put too fine a point on it, I'm sure there's more VHF and UHF activity in the far smaller cities of Canberra, Adelaide and Brisbane than there is in Sydney! Is it the interference and poor local propagation which keeps people away in droves? If you have an opinion on this, why not drop Feedback a line and let us all know what you think...

You can bung a quick response off to vk3ce@tbsa.com.au. That saves you the postage... and saves me retyping it!

Hey, I wanted to tell you all about two fabulous new hand-held scanners from **Welz** and **Icom**, but I'm almost out of room. In short, they're both small (the Welz, made by Diamond, is really tiny) and both cover 500kHz to 1300MHz. These things are both quite astonishing in terms of what they can hear — and the Icom takes the AR8000 on with all barrels by offering all-mode coverage for around $300 or so *less* than the AOR. That should set the cat amongst the pigeons! Keep watching for our reviews...

Have a fantastic Christmas and New Year break in the meantime. We'll see you again next time... 73 until then.

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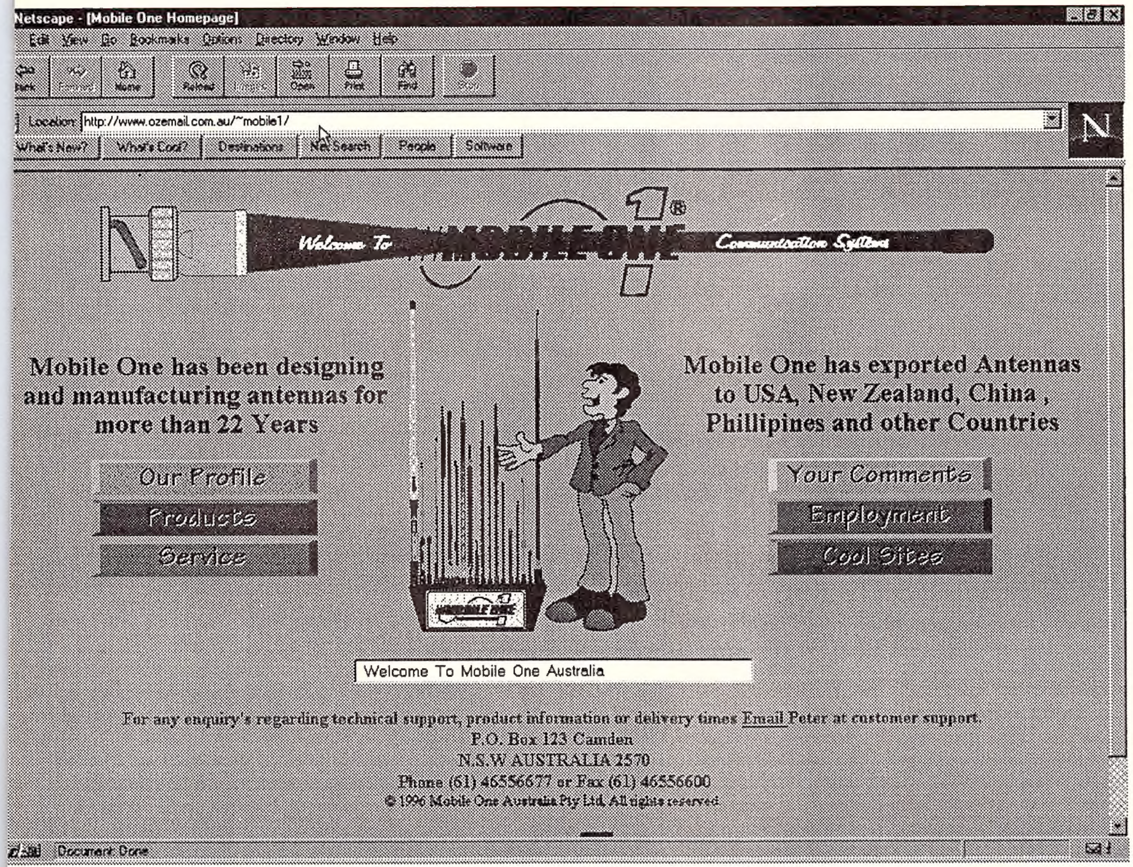
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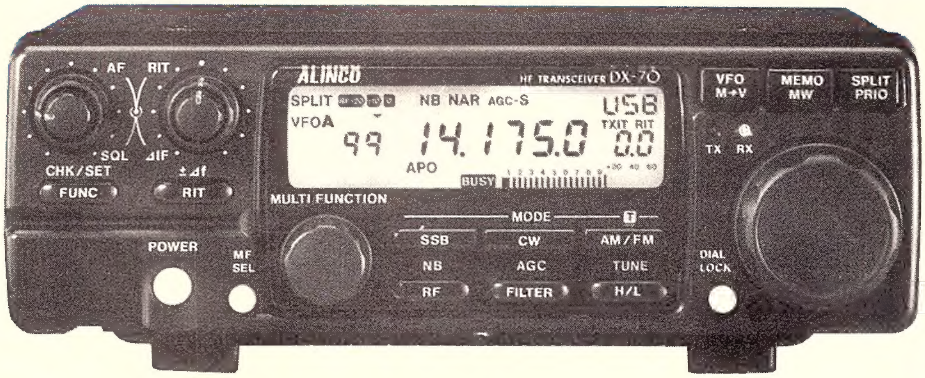

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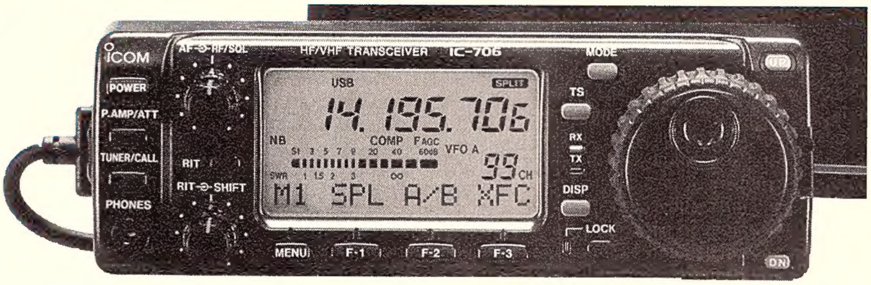

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HAND-HELD SCANNERS

why it's in your interest to own at least one!

By Bob Bell, VK2UTG

Possibly the most asked question that arrives on my desk through the mail, or on the phone when readers of R&C magazine ring me personally is this: 'Should I opt for a hand-held scanner radio, or should I go with one of the all-singing, all-dancing desktop models?'

To me, there are three answers: hand-held, HAND-HELD, and ***HAND-HELD****!*

The modern generation top-of-the-line hand-held scanner radio has everything you would ever wish for (save a not-yet-invented trunking-monitoring mode!) in a small package.

Usually the only thing lacking is speaker audio volume and quality. This small problem can be cured with the additional of an external speaker. If you drive the radio from either the AC outlet using the wall charger/battery eliminator, or from the car using its DC supply with a cigarette lighter plug, or via a cable direct from the battery, you essentially have all the features of a desktop scanner radio in your hand-held package.

Here are some of the positive benefits you'll drive from owning a hand-held radio, or owning one in addition to your other desk top or 'base' scanners.

1. Portability
2. Security from theft (ie you take it with you!)
3. Ability to secrete the radio on your person or in your car
4. Expansive memory positions that equal most base scanners
5. The availability of HF/SSB on some more recent hand-helds
6. Super-wideband frequency coverage on top-of-the-line models
7. Many persons will mistake your scanner for a mobile phone
8. Wide range of models available, at prices to suit your pocket
9. Use most hand-helds in your car without external antennas

What sort of activity do you mostly engage in with your scanners? Are you a train buff? Or do you love aircraft?

Maybe you enjoy listening to the emergency services first and foremost?

Some monitors specialise in listening to security companies, others private investigators, still others amateur radio. It doesn't matter *what* you are interested in primarily.

Whatever you monitor, the addition of a hand-held scanner to your family of radios will certainly enhance your ability to pursue your monitoring interest to its fullest degree. Let's look at each of the points I have raised, and go into more detail so that you fully understand the significance of each of the statements, and what they could mean to your enjoyment of the monitoring hobby.

Portability

How many times have your gone to some event, or some location where you were going to use your vehicle-mounted scanner, only to have some action occur which you couldn't actually see properly from your car? The addition of a hand-held scanner would have given you the ability to clip the hand-held to your belt, or carry it in your jacket, using an earpiece if necessary, to not only monitor, but also *watch* the action.

Aeronautical monitoring is a classic example. Some years ago, Qantas flew its first Boeing 747-400 model VH-OJA to Sydney non-stop from Heathrow Airport in London, England. It took just over 20 hours to fly, and there was lots of hype when the aircraft arrived. If you were sitting in one of the perimeter airport car parks, you would have been able to watch and also monitor the arrival of the jumbo.

But after the arrival, many of us wanted to get as close to the international terminal as possible to actually watch it arrive at the Qantas maintenance area. This area is almost impossible to see unless you are positioned within the international terminal building, on the eastern windows, or observation deck. There is only one way to continue monitoring the radio transmissions in this situation — hand-held.

Security from theft

Just twelve months ago, I had my beloved passenger van stolen. The particular model up-market van is not on high on the list of 'most favoured vehicles' stolen by thieves, but I had made the mistake of 'advertising' that I had radio equipment in-side, by having a plethora of antennae mounted on both sides of the van.

As a result, the culprits involved in the theft were not actually after my car — they just wanted to steal the radio gear. And steal they did, leaving not even the mounting screws that had held the brackets to the mounting points on the console.

I got my van back, damaged and with all equipment gone, including some top-end mobile-mounted desktop base scanners, and amateur radio transceivers. As soon as the vehicle

....☞

HAND-HELD SCANNERS

continued...

was nicked, I knew what they wanted, and I knew I wouldn't be getting it back. And I knew that I would no longer be running base scanners or other radios from the car in the future.

My entire vehicle set up now is hand-held, from scanners right down to my cellular telephone setup. I have a black sports bag, or sometimes a briefcase. Whenever I leave the vehicle, my radios go with me, along with the accessories I have been carrying. This way, if the car goes west without its owner, I can still listen to the cops chase the culprits when it's spotted!

Another point here is that my scanners were filled with police frequencies, amongst other things. The thieves thus found some new frequencies that maybe they didn't know about, and perhaps were better off not knowing about. If the radios had been in my sports bag that fateful day, this situation would not have occurred. Security can also be spelled... HANDHELD!

Secrete the radio on you or in your car

Say, for example, you are visiting the main departures lobby of the Sydney Airport International Terminal, and observe the operations of the Federal Protective Service while you say good bye to your lucky relatives who are about to jet away overseas.

If you hold your hand-held openly, it may be mistaken for a mobile cellular telephone. Correct. But that's only if it is turned off! What about when the first call blurts out through the speaker and the nearest Federal Protective Service operative hears his radio operator emanating from your 'mobile phone'. I tell you now, he will walk up to you and, depending on his knowledge of the Radio Communications Act, and what his powers are relating to the situation, you may lose your scanner right there and then! You will probably eventually get it back, when the operative realises it *is* legal to listen. But that may be even weeks down the track, you may have had to get legal assistance to boot and, depending on how well cared-for your radio is in their hands, you may get it back in less than perfect condition.

In situations like this, discretion is a keynote. Even white-coloured radio earpieces will attract attention. Try attaching a 'Walkman' type stereo headset to your scanner, with a mono-plug adaptor, so you can hear audio through both ears. Some hand-helds, such as the Uniden Bearcat UBC3000XLT will permit mono monitoring through both sides of your 'Walkman' headset without needing an adaptor.

Secrete your scanner in your pocket or under your coat on your belt, and everyone in the terminal including the Federal Protective Service will believe you are merely listening to music on your 'Walkman'. You will be covert, and successful at monitoring whatever you wish, without drawing one small bit of attention to yourself.

In your car, using velcro attachments, you can secure your hand-held, while hiding it from view from passing motorists or pedestrians. You can velcro-attach your external speaker to the interior of your vehicle. And there is no need for holes. When you leave the car, not only can you take the scanners in your bag, you can take the speakers as well if your heart desires! Yes, the ability to secrete your scanner operations is so much easier with a hand-held!

Memories equal to base scanners...

With the top-end scanner radios, 1000 channel positions is becoming the norm. This equals any of the top-line base scanners, and when you consider that, by utilising computer control with your hand-held scanner, you can increase the number of channels to almost an unlimited number, why would you need a desk top model?

Thinking scannists own at least one hand-held!

The highly-regarde AOR AR8000

HF/SSB on some recent hand-helds

Early attempts to integrate HF/SSB capability into hand-held scanners were less than totally successful. Some of the radios were only able to tune to the nearest 5 kHz, and performance was less-than-perfect. Sony had a go at the HF/SSB portable in the Air 7/Air 8 series, and lots of people wrote to me and told me how great they were. But frankly I wasn't impressed.

The AOR models AR1500 and AR8000 are two recent generation HF/SSB capable hand-held radios that have cleaned up the act, and make HF/SSB monitoring from a hand-held a viable reality. Just

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be careful which radio you select, and expect to pay for quality. You get nothing for nothing in this world, and the purchase of hand-held scanners is no exception to that rule. For HF/SSB monitoring, you can now use a hand-held!

Super-wideband frequency coverage

Modern hand-helds such as the AOR model AR8000 boast super-wideband frequency coverage, almost offering that old chestnut 'DC to Daylight'. While it's a little short of that, everything you would ever want to monitor will be found on later generation top-of-the line scanners. This ensures that if you are a military aviation buff, you can not only monitor the VHF civil bands, but also the military UHF bands occupied by all of our military aviation squadrons and companies. And military satellites, and television sound carriers and listening devices in out-of-the-way portions of the spectrum, and so on...

Yes, the radio world is certainly your oyster with some of the late-model technology currently available on the marketplace. My suggestion is to buy up a highly-sophisticated late-model hand-held *now*, before some politician decides we can't own them. Super-wideband frequency capability is now also the domain of the hand-held!

Many persons will mistake your scanner for a mobile phone. It's amazing how many people who have no knowledge of radio will believe your hand-held scanner is a cellular mobile telephone! And why do anything to discourage that? This is great, because it enables you to carry your hand-held scanner out in the open in full view, without even the slightest bit of suspicion by those you are interested in monitoring on their two-way radios. If you don't turn the scanner on and have audio blaring out of the speaker, the illusion will be intact and the 'enemy' will most likely believe you are carrying a phone.

A scenario that is true: I am the 'star' of this piece, and it took place in 1990 in what is now the Qantas Domestic Terminal at Sydney International Airport. I walked up the escalators to the magnetometer (door frame) security devices. As I walked through I handed over my Cobra SR-15 miniature hand-held scanner to the security guard to check over. He said to me "Nice phone!". I said "Thanks", and walked through the Garrett magnetometer frame.

My small change set the sensitively-programmed device off, and I was hand 'wanded'. When the change was found, I got my 'phone' back and walked around to the terminal bay I was interested in visiting. They were concerned about my coins in my pocket, but couldn't have given the proverbial about my 'cellular telephone', which was in fact my hand-held scanner!

The price range...

There's a wide range of models available, at prices to suit just about any pocket. Some of the more popular hand-held scanners are listed here: **AOR** models AR8000, AR1500, AR1000XLT, **Camnis** HSC-050, **Comtel** 203, Comtel 204, **Diamond** (**Welz**) WS1000E, **Icom** IC-R1 and IC-R10, **Uniden** Bearcat UBC3000XLT, Uniden UBC120XLT, Uniden Bearcat UBC220XLT, UBC2500XLT, Uniden Sportcat SC150B, and **Yupiteru** MVT-7100. Prices vary week to week, so I'm not going to try nominating what sort of money you'll pay.

You will notice that conspicuous by their absence are the range of **Realistic** or **Netset** brand radios from Tandy Electronics. These radios are falling behind in several ways, and as such I am not listing them here. First up, they don't offer battery chargers included in the deal with each radio — you have to buy them separately — and the radios don't come with any kind of carry case, and as they are invariably of plastic construction, they are easily damaged. In addition, their frequency coverage is poor compared to most other models on the market, and Tandy models do not have the ability generally to manually select AM-NFM-WFM at will.

So look them all over and choose the best radio you can afford to do the job you want your scanner to do for you. And plan for the future when you buy. Maybe you aren't interested in military satellites today, but tomorrow, who knows what you expect from your hand-held!

Going mobile...

You can use most hand-helds in your car without needing external antennas. Most late-model hand-held scanner radios are peaked up in sensitivity and are capable of track-tuning so efficiently across their frequency coverage that if you lie the portable on your car seat next to you, and hit 'SCAN', the radio will work very efficiently as long as you are within reasonable distance of the transmitting stations. I'm talking within 20 kilometres or so.

The current generation of hand-held rubberised antennas appear to me to be doing the job much more efficiently than their early-model counterparts, which in most cases did require you to replace them with some form of external antenna for serious mobile scanning.

These days, as long as you have an external speaker in the car to plug into the scanner, and external DC power available, you have a very efficient monitoring tool, without the necessity to mount bulky, obtrusive, unsightly, and often unwanted thief-attracting external antennas to the roof of your vehicle. If you can operate without external antennas, that's the way to go with your scanning — hand-held!

To complete this article, I'm going to list the frequencies in my 400-channel Bearcat hand-held. This is due to many requests from readers for me to give them some idea what I listen to using my hand-held scanner in the greater Sydney metropolitan area of NSW.

Program: Uniden Bearcat UBC3000XLT

Ch 1 - 93:	NSW Police UHF main and voting frequencies
Ch 94 - 248:	Bankstown and Sydney International Airport
Ch 249 - 264:	NSW Police & NSW Ambulance VHF
Ch 264 - 277:	NSW Fire Brigades VHF/UHF
Ch 278 - 280:	Federal Protective Service
Ch 281 - 284:	Sydney Theme Park (Australia's Wonderland)
Ch 285 - 294:	News Media: Radio, TV News, Newspapers
Ch 295 - 300:	NSW Bush Fire Brigades VHF/UHF
Ch 301 - 312:	Fisheries, Security, Universities, Missions, Sheriffs
Ch 313 - 315:	NSW Road Traffic Authority
Ch 316 - 320:	Maritime VHF radio frequencies of major interest
Ch 321 - 324:	Train radio (main channels of interest) VHF/UHF
Ch 323 - 351:	Secondary TV and Newspaper channels
Ch 352 - 354:	NSW State Emergency Services (old VHF)
Ch 356 - 357:	NSW St John's Ambulance Service
Ch 358 - 360:	Helicopter Rescue Services
Ch 361 - 371:	Sydney Buses radio network
Ch 372 - 374:	Three television station sound carriers (7,9,10)
Ch 375 - 388:	Amateur Radio 2 metre/70 centimetre repeaters
Ch 389 - 400:	Local Tow Truck firms:

You will notice that I do not have services neatly tucked into banks of 10, 20, 30 etc. This is by personal choice, but if you want to be able to select or de-select certain monitoring target organisations, it may be in your interests to program your hand-held scanner in this way, so that a simple touch of a button will either bring up or dispatch the services you wish to monitor when the radio is in 'SCAN'.

So now... head off and take a long, hard serious look at a hand-held scanner!

SOUTH AUSTRALIAN EMERGENCY FREQUENCIES

Here is yet another list of emergency frequencies courtesy of Michael Evans. In the next issue we hope to have the Australian GP freqs - that should be interesting!

The radio spectrum is an ever changing resource, and keeping an accurate eye on what is happening can become a very tedious task.

One of the most popular forms of monitoring appears to be in the field of our Emergency Services, those very dedicated men & women who in many cases are risking life and limb to ensure the general public's safety.

As the emergency services across the country have undergone a number of changes over the past couple of years, it is about time that we brought you up to date on what they are currently using frequency- wise.

This information has been compiled from numerous generally available sources including the internet, the fidonet bbs community and the SMA frequency database.

I must point out that these frequencies are being provided on the basis that they are used for *"Casual Monitoring"* only.

The emergency services do not want, or need, people with scanners racing to the scene of an accident, fire or other emergency. Do not become involved in the emergency by trying to gain a vantage point with your scanner in one hand. Listen in from a distance!

First off in this multi part series we shall take a look at the emergency services of South Australia.

The Metropolitan Fire Service is the organisation responsible for servicing the Metro Adelaide area and basically they use the five channels listed below, however, additionally there are the few others which come up on the CD Rom listed to them, so if you know exactly what they are used for, drop me a line.

162.070000	METRO FIRE
162.730000	METRO FIRE CFS Liaison
164.037500	METRO FIRE
165.150000	METRO FIRE
168.220000	METRO FIRE
168.250000	METRO FIRE CH 03
168.340000	METRO FIRE CH 04
168.820000	METRO FIRE CH 01
168.850000	METRO FIRE CH 02
168.880000	METRO FIRE CH 05

Metro Fire Service

Like most emergency services, the Metro Fire team utilises a system of codes over the radio for the purposes of speeding up communications from the fire ground back to base. Here is the list of those codes to help you decipher what is going on:

K1	Responding to fire alarm.
K2	Arrived on scene.
K3	At incident available.
K4	Mobile and available in home area.
K5	Off duty at home station.
K6	Available for duties in area...
K7	At fire station...
K8	Duty person available at home.
K9	Duty person available on pager.
K10	Diving Accident
K11-(X)	Ambulance required.
K12	Electricity workers required.
K13	Gas Company required.
K14	Police required (reason).
K15	Fire investigator required.
K16	SES crew required (reason).
K17	CFS crew required (reason).
K23	Specialist advice required.
K24	Dangerous goods involved, further detail required.
K24 - 2	Dangerous goods involved, information to follow.
K25	Unable to proceed (reason).
K26	Proceed to ...
K27	On scene at.
K28	Return to station.
K29	Return other tenders.
K31 - 2	Available on radio/pager.
K31 - 3	Radio check.
K32	Request alarm status.
K32 - 1	Fire Alarm has not cleared.
K32 - 2	Fire Alarm has cleared.
K32 - 3	Fire Alarm in TEST mode.
K34	More Details to follow.
K35	Map reference required.
K36	Address Verification required.
K37	Change to channel X.
K38	Initial control.
K38 - 2	Initial control centre.
K38 - 3	Incident control centre.
K39	Change of commanding officer (Name).
K40	Bomb threat.
K41	Fatal Injuries.
K42	Persons reported.
K43	Persons accounted for.
K44	Tenders involved for lengthy time.
K45	Tenders still on scene.
K46	Relief/Backup required.
K55	At scene, Special services incident.
K66	At scene, Rubbish, grass etc. fire.
K77	At scene, No sign of fire.
K88	At scene, Property fire, small.
K99	At scene, Property fire, burning well.
K100	Clear of all relays (controlled traffic lights).

South Australian Police UHF Assignments

One of the positive steps to come from the Cyclone Tracey disaster, was the national frequency allocation plan for Police across Australia. The then "Department Of Communications" found 64 consecutive frequencies in the block from 467.850 MHz to 469.425 MHz and allocated them Nationally for use by the Police departments. The South Australian plan looks something like this:-

POLICE CH 1	Region D	467.850
POLICE CH 2	Region C	467.875
POLICE CH 3	Region B	467.900
POLICE CH 4	Region C	467.925
POLICE CH 5	Region B	467.950
POLICE CH 6		467.975
POLICE CH 7	Portables & Car-Car	468.000
POLICE CH 8	Portables & Car-Car	468.025
POLICE CH 9	Portables & Car-Car	468.050
POLICE CH 10	Portables & Car-Car	468.075
POLICE CH 11	Car-Car	468.100
POLICE CH 12	Car-Car	468.125
POLICE CH 13	Region D	468.150
POLICE CH 14		468.175
POLICE CH 15		468.200
POLICE CH 16		468.225

COUNTRY FIRE SERVICE FREQUENCIES

The Country Fire Service, like most of their counterparts across Australia, is largely staffed by volunteers from the community which it serves. They rely heavily on their own fundraising abilities to obtain the necessary finances to keep themselves going. The C.F.S. utilise a number of frequencies across the state, and you will find them in your area on one of the following channels:-

162.730
162.970
163.060 Ch 10
163.075 Ch 12
163.090 Ch 07
163.120 Ch 02
163.150 Ch 08
163.165 Ch 13
163.195 Ch 15
163.210 Ch 05
163.240 Ch 03
163.270 Ch 06
163.285 Ch 14
163.300 Ch 04
163.360 Ch 11
163.405 Ch 17
163.420 Ch 09
163.465
163.510 Ch 18
163.525 Ch 19
163.540 Ch 20
163.570 Ch 16
163.600
163.630 Ch 01
165.370
165.490
487.225
487.975
488.300
488.475
488.600000
488.875000

POLICE CH 17	Region B	468.250
POLICE CH 18		468.275
POLICE CH 19		468.300
POLICE CH 20		468.325
POLICE CH 21	Region C	468.350
POLICE CH 22	Region C	468.375
POLICE CH 23	Region B	468.400
POLICE CH 24		468.425
POLICE CH 25		468.450
POLICE CH 26	Region B	468.475
POLICE CH 27	Region D	468.500
POLICE CH 28	Region C	468.525
POLICE CH 29		468.550
POLICE CH 30	Special Events	468.575
POLICE CH 31		468.600
POLICE CH 32		468.625
POLICE CH 33	Region C	468.650
POLICE CH 34		468.675
POLICE CH 35	Region D	468.700
POLICE CH 36	Region C	468.725
POLICE CH 37		468.750
POLICE CH 38	Region D	468.775
POLICE CH 39		468.800
POLICE CH 40	Emergency	468.825
POLICE CH 41		468.850
POLICE CH 42		468.875
POLICE CH 43		468.900
POLICE CH 44		468.925
POLICE CH 45		468.950
POLICE CH 46	Region D	468.975
POLICE CH 47	Region B	469.000
POLICE CH 48		469.025
POLICE CH 49	Region D	469.050
POLICE CH 50		469.075
POLICE CH 51	Region D	469.100
POLICE CH 52		469.125
POLICE CH 53	Region B	469.150
POLICE CH 54		469.175
POLICE CH 55		469.200
POLICE CH 56		469.225
POLICE CH 57		469.250
POLICE CH 58	Region D	469.275
POLICE CH 59	Special Investigations	469.300
POLICE CH 60	Special Investigations	469.325
POLICE CH 61		469.350
POLICE CH 62		469.375
POLICE CH 63		469.400
POLICE CH 64		469.425

The Police also use a complex set of codes designed to speed up the process of getting the message across "On The Air". Here are some of the more common ones you will hear :-

Code	Meaning
101	Disturbing the peace
102	Drunk & disorderly
103	Wilful damage
104	Potential violent dispute
105	Request for backup
106	Domestic
107	Street offence
201	Motor vehicle accident
202	Motor vehicle accident - fatal
203	Motor vehicle accident - hit & run
204	Motor vehicle accident - involving police vehicle(s)
205	Accident - government
206	Accident - industrial
207	Unconscious person
301	Larceny
302	Robbery
303	Armed hold-up
304	Shop lifting
401	Security company alarm
402	Break and entry
403	Trespass
404	Suspicious person(s)
405	Damage to premises
407	Escapee from prison or police custody
501	Assault
502	Indecent assault
503	Homicide
504	Sudden death
505	Rape
506	Indecent exposure
508	Abduction
601	Police pursuit
602	Driving while under the influence of alcohol
603	Traffic offence
604	Stolen vehicle
605	Tampering with motor vehicle
606	Abandoned vehicle
701	Fire - Structure
702	Fire - Grass
703	Fire - Motor vehicle
704	Fire - Other
705	Bomb threat
706	Explosive threat
801	Police officer in trouble assistance required

Other divisions within the force such as the Air Wing and the Water Police have their own channels that they also use additional to those I have just listed earlier.

Police Air Wing	Water Police		
119.100 MHz AM	156.300	156.525	156.675
123.100 MHz AM	156.375	156.600	156.800
123.200 MHz AM			
131.600 MHz AM			

South Australian Country VHF Network

162.610	169.060	169.450
164.200	169.090	169.780
164.230	169.120	
164.260	169.150	
164.350	169.210	
167.320	169.240	
167.410	169.270	
168.280	169.300	
169.030	169.360	

Along with the VHF network which is used in country areas of South Australia, the SA Police also utilise their HF network with all of the Country Highway Patrol cars fitted out with HF communications gear.
Each vehicle can be individually Selectively Called (SelCal) by VKA control.
Their HF network is made up of the following frequencies:-

2.03340	3.82150	6.90650
2.11340	4.12640	6.98500
2.26150	4.55850	7.33150
2.31750	4.56150	7.65850
2.52540	4.55750	7.66150
2.56450	4.26140	7.80150
2.58150	4.78150	10.28150
2.63200	5.12850	10.29650
2.66950	5.18150	10.50650
2.78150	5.68150	14.57350
3.37350	5.83450	18.54350
3.73350	5.94650	
3.74750	6.21640	

You will find that some of these frequencies will be common amongst other state police forces. With HF propagation allowing long distance communications, you will quite often also hear radio checks being carried out between other states on those channels.
Another group of very dedicated people making up the infrastructure of the South Australian Emergency services are the State Emergency Service (S.E.S.) - see separate panel below.
Well that about raps up the South Australian Emergency Services update, if you have some other information that you feel may be of use to other like minded hobbyist listeners, by all means let me know.
You can contact me on the internet michael@tbsa.com.au or by regular mail to PO Box 8054, Northland Centre, Vic. 3072
Next month we will take a look at the emergency services of Victoria.
Happy Listening...

SES FREQUENCIES

Most of these men and women are unpaid volunteers who give up their time and resources to serve the community in times of need. The S.E.S. can be called to any emergency ranging from a house damaged during a storm right through to a car accident - and everything else in between.
The South Australian S.E.S. radio network is a very comprehensive one and comprises many base stations spread across the state. To tune in on the action take a listen to these:-

162.610000	163.990000 Ch 08	167.170000	167.410000 Ch 02
162.670000	164.080000 Ch 06	167.290000 Ch 05	491.375000
162.790000	164.170000 Ch 07	167.320000 Ch 04	
163.120000	164.860000	167.350000 Ch 03	
163.750000	165.670000	167.380000 Ch 01	

For those with H.F. capabilities, these frequencies are also used by the SES for communications over long distances.

2.5645	3.7335	4.5775	7.3315
2.5735	3.7475	5.8345	10.2815

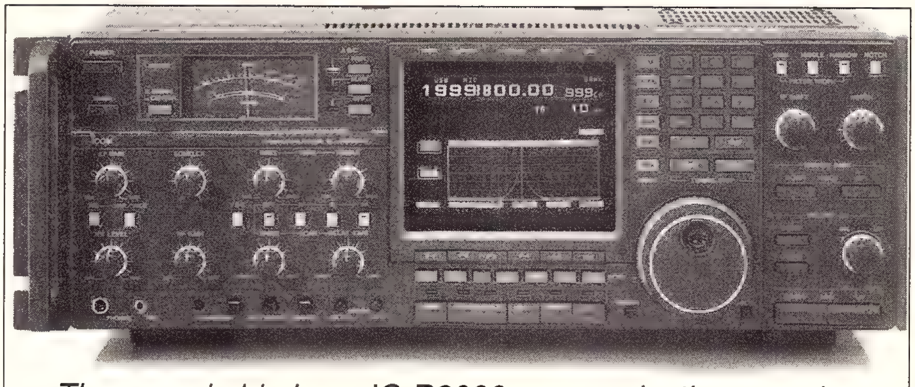
Contributor John Batty, VK4MBK, writes about what...

I WOULD REALLY LIKE FOR CHRISTMAS

The other day the Editor asked me this question: if money was no object, what would be your dream equipment for the type of monitoring you write about? Cruel man; this is like asking an alcoholic to describe the taste of his favourite cognac.

First of all, what parameters would this equipment need to fulfil? What kind of signals do I chase?

My hunting ground is mainly from 2MHz to 30MHz. Being in a country area means that a lot of very interesting VHF and UHF signal activity is 'passing trade' — vehicles and aircraft enroute past my QTH. I currently have a hand-held AR-1500 scanner to cover this, but the fiddling about required to keep it searching around for VHF/UHF traffic while I monitor the HF bands is usually too much bother for the value of the infrequent catches.



The remarkable Icom IC-R9000 communications receiver

However, things would be different if the whole spectrum could be covered with one very good receiver...

The action I chase takes place on AM and SSB; Wide and Narrow FM would be nice to have too. Naturally, the higher the sensitivity the better. While manual tuning is my method of choice, it would be useful to have a scanning option; also, since many of the frequencies I like to monitor are known, a programmable memory bank would give the ability to instantly track a lot of QSYs. Many times signals are buried under heterodynes or other noise, so it would certainly give the ears a rest if this annoying QRM could be blanked away from the signal of interest with a variable IF notch filter.

To cover all the different types of utility transmissions — military, diplomatic, news service, maritime, aeronautical etc — I would like to be able to decode as many data modes as humanly possible, not forgetting that many military forces and diplomatic operators can select their own choice of speed, mark space and shift whenever they like.

The ideal data controller would have to be able to analyse an incoming signal and tell me what settings to use, rather than having to manually try each setting hoping to hit the right one as I do now.

I don't want much, do I?

The right equipment is out there, however, if you have the dollars. Let's take a look...

The receiver...

The **Icom IC-R9000** receiver fits the bill; in the USA, where almost anyone can own almost anything, this receiver is only available for government orders or for export, which should indicate the kind of capabilities it has.

(The reason for the restricted sale in the US is that the IC-R9000 covers the cellular telephone bands. No equipment can be sold in the USA which covers those frequencies. Ed)

The IC-R9000 covers 100kHz to 1999.8MHz with no breaks. What's more is that between 1.6MHz and 30MHz it has a sensitivity of 0.16µV, while from 30MHz to 999MHz sensitivity is 0.32µV. I have no data on how quickly these figures deteriorate below 1.6 or above 999, but as a comparison, the Kenwood R-1000 I am currently using has a sensitivity of 0.5µV on SSB and 2µV on AM, with a 50-ohm antenna. One would assume that above 999MHz you would be starting to seriously think about pre-amplification of signals anyway.

Modes available are AM, SSB, CW, FM/WFM and FSK (Frequency-Shift Keying, the best way to send RTTY). A nice chunky manual tuning knob is just the start of the tuning options. All the others which follow can be entered by a front-panel keypad with human-sized buttons, as opposed to the elf-buttons on my AOR. The size of the tuning steps can be selected from 10Hz, 100Hz, 1kHz, 5kHz, 9kHz, 10kHz, 12.5kHz, 20kHz, 25kHz or 100kHz.

For storing your known frequencies, there are 1000 memories arranged in ten banks of 100 frequencies each; along with frequencies you can store details such as tuning step size, mode and notch filter width; the notch filter itself can be preselected at wide, medium or narrow width and then smoothly varied within those broad constraints, giving an almost infinitely-variable filter. The IF shift is separately variable also, so there should be no interference from which you cannot escape.

Should you wish to scan the memories or any part of the spectrum, you can do so using any one of seven scan modes. Using **Program Scan**, arbitrary upper and lower frequency limits are set and the receiver will scan between them. **Memory Scan** will run through the channels programmed into a designated bank, while **Selected Number Memory Scan** will do the same but only scan those channels with a selected mode; for instance, if you have 75 channels stored with FSK as the mode and 25 with SSB, then Selected Number Memory Scan can scan either type while skipping the other.

Priority Scan will continuously monitor designated priority channels within a bank, while **Auto Memory Write Scan**, used with Program Scan, will write active frequencies into a memory bank for you to review later. **Delta Frequency Scan** will monitor activity *around* the frequency you are currently monitoring up to 100kHz either side.

Finally, **Voice Scan Control** will skip non-intelligent signals — this does not mean that it will not lock onto your local FM DJ; it means that the radio will scan through your designated channels but skip atmospheric noise, heterodynes and dead carriers etc — it will recognise 'voice' signals. Scan speed is continuously adjustable up to 13 channels per second.

The squelch can be set to operate either at a specific noise level or a selected signal-strength meter level; this means that you can either put up with frequent triggering caused by 'fried-egg crackle' or only trigger when the meter peaks and hangs, for example on long voice peaks. Even the noise blanker can be set to either wide or narrow effect to further tailor how much interference you put up with.

By now you are probably thinking that keeping track of all these different modes and settings would be difficult. Not so, because I've left the most innovative feature 'til last. Smack bang in the centre of the front panel is a video display screen measuring approximately 113 by 825 mm (the whole radio, by the way, measures 425 X 150 x 366 (mm, whd) and weighs in at 20kg). The top half of the screen shows at a glance the frequency, mode, tuning step currently set, channel and bank number (if monitoring a memory channel) and filter settings.

The bottom half of the screen is given over to a graphic spectrum scope, which shows band activity at a selectable 25, 50 or 100 kHz either side of the signal you are monitoring. It also doubles as a tuning guide, as it displays the envelope of the monitored signal. Another window can be called to the screen within which you can see the contents of 10 memories within one block and scroll up or down through the rest. The settings of the two on-board clocks, five separate daily timers and two sleep timers can also be called to the screen.

As if this were not enough, the video screen has its own external input and output connectors, so that you can either transfer the contents of the screen to your own external monitor or put the contents of your monitor screen onto the radio screen. If you want to, you can even tune into and watch TV or hook in a video on your radio as you monitor. The output from your external RTTY/fax decoder can also be routed to this terminal, allowing you to visually monitor the output on your radio rather than a computer.

The rest of the specifications include selectivity of 6kHz AM, 2.4kHz SSB, 0.5kHz CW, adjustable 6, 15 or 30kHz NFM and 150kHz WFM, frequency stability of plus/minus 25Hz from 0.1 to 30MHz, four IFs (the first IF is 48.8Mhz for 0.1-30MHz, 778.7MHz for 30-500MHz and 278.7MHz for 500-1000MHz; 2nd IF is 10.7MHz, 3rd is 0.455MHz and 4th is 10.7MHz).

Universal's versatile M8000 data decoder

Four antenna connectors (two HF, two VHF/UHF), record/remote, IF Out, DC Out, Video In/Out, Ext Speaker, Line Out, Data In, Accessories and Speech Out (for the optional Speech Synthesiser) make up the rear panel connectors, while the front panel has a headphone socket and another record out socket. Current list price in this country is $12,506 (which is why I've still got the Kenwood).

The IC-R8500, on the other hand, costs $3786 — about $3500 on the street — yet it is capable of just about everything the IC-R9000 can do, save the spectrum scope functions. See the shaded box on this page for more information on the IC-R8500, or check out the full review which also appears in this issue. Ed.

The data modes...

We've covered the dream receiver; into what do we feed all the data communications we will receive on it?

I would suggest a **Universal M-8000v7** Communications Terminal, built by Digital Electronic Systems in the USA. This unit requires a VGA colour monitor to show output, which includes a two-line status readout showing all current settings.

A real-time spectral display on the screen allows visual analysis of the monitored signal, and tuning is facilitated by both bar-graph and X-Y tuning scopes. Incoming text is displayed in an 80-character display, 26 lines deep. The video display can also be echoed to another screen, so that you could transfer it to the screen on the IC-R9000. There is a screen print and a screen save feature.

A printer (including a laser printer) can be connected for hard-copy. Also available are five programmable sel-call settings; up to three words or codes can be set in each, and when or if these sel-calls are received the unit will activate or stop the printer. Multiple Scroll Inhibit ensures that blank space is not printed either to the printer or the screen, while Automatic Threshold Control and Automatic Gain Control track the signal through fading conditions. Both the screen and the printer can be controlled under squelch, and the input signal has a separate manual gain control.

It won't make any difference what data transmissions your new super receiver pulls in, because this unit will decode practically anything. If you prefer, rather than trying to manually tune an unknown RTTY signal the unit will even analyse it for you and tell you the mark, shift and space settings (shift and space settings are continuously manually or automatically variable, while the unit tunes the mark automatically). The Auto Baud, Auto Shift and Auto Tune features mean that once you have found a signal the unit can analyse it, fine-tune it and lock on.

Its 28 modes include the following:

CW: 5 to 120 WPM with automatic speed locking.

RTTY (Baudot): 45.45, 50, 57, 75 and 100 baud standard speeds, 20 to 250 baud variable non-standard speeds and/or Bit-inverted with automatic or manual sequencing. Selectable standard Baudot shifts of 170, 425 or 850; also non-standard shifts of 60, 85 or 1200.

RTTY ASCII: 75, 110, 150, 300, 600, 1050, 1200 or 1800 baud. Selectable shifts of 85, 170, 425, 850 or 1200.

Russian Third-Shift **Cyrillic RTTY**, printing Cyrillic characters.

SITOR A/AMTOR A/ARQ TOR: Point-to-point two-way comms similar to Packet.

SITOR B/AMTOR B/FEC TOR: Broadcast with forward error-correcting (slightly better than straight RTTY).

Although military and diplomatic stations use the above modes, much better hunting of this kind will be found using those which follow:

ARQ-M2: Time Division Multiplex two-channel at 86, 96 and 100 baud. TDM enables several stations at once to use a single frequency, by continuously electronically polling and passing a 'token' to each station to find out who has material to transmit. When a 'loaded' station is polled, it 'holds' the token and transmits its material; the frequency is kept clear by other stations because they do not hold the 'token'. A French system.

ARQ-M4: Time Division Multiplex 4-channel at 172, 192 and 200 baud.

ARQ-E at 48, 64, 72, 86, 96, 144 and 192 baud. Another French system.

ARQ-E3 at 48, 64, 72, 86, 96, 100, 192 and 200 baud. French again.

ARQ-S in 4, 5, 6, or 7-character groups: Selective broadcast system used by Austria and Indonesia.

ARQ6-90 at 200 baud.

SWED-ARQ in 3, 9 or 22-character groups. A Swedish system.

POL-ARQ at 100 baud: European diplomatic traffic.

FEC-A at 96, 144 and 192 baud: Germany and Turkey.

FEC-S at 96, 100, 144, 192 and 200 baud.

Piccolo: RTTY using multiple tones. Britain uses 6 tones, the Algerians use 8 and Russia uses 36. So called because it sounds like a madman playing a piccolo.

VFT with 8, 12, 16 or 24 channels: Voice Frequency Telegraphy or Frequency Division Multiplex. This system allows multiple signals to be sent on one 3kHz-wide upper sideband. This system is used by many governments including those of Australia, Britain, USA, South Africa and Russia.

But that's not all! Other modes include:

Packet (AX.25 Protocol) at 300 and 1200 baud.

PacTOR 100 and 200 baud.

FAX, both AM and FM, with high-resolution false-colour display at 60, 90, 120 and 240 lines per minute.

GMDSS (Global Marine Distress and Safety System) at 100 baud.

ACARS: Aviation digital communications.

POCSAG and **GOLAY** paging systems.

Databit Mode, which converts all incoming data into ones or zeros.

Literal Mode, which converts non-printing characters into special symbols for display on the video screen.

A microprocessor-controlled self-test diagnostic start, a real-time clock and calendar round out the M-8000v7, which at 415 X 89 X 317.5 (mm, whd) and weighing just over 4kg, will bolt into the same 482.5mm (19") equipment rack as the IC-R9000 receiver.

The cost? A mere $2700.

And we haven't yet dealt with the antennas and shack computer to go with that lot, either. Perhaps that will have to wait until next time. Anyway, only another 100 or so articles to write and I can buy the lot...!

The Listening Post.

........compiled by Michael Evans...michael@tbsa.com.au...

Another year in the world of *The Listening Post* — welcome to 1997, fellow scanner buffs!

January is a busy time in Melbourne with the **Ford Australian Open** taking place at Melbourne Park in the city. This event brings some of the worlds top tennis professionals and a massive media entourage with it each year, and can make for some very interesting and entertaining listening for the scanner fan.

The cream of world tennis for both men and women make this annual pilgrimage to Melbourne each year to put on a tennis tournament that draws unbelievable crowds from around Australia and overseas.

The number of people it takes to pull this event into shape is incredible — aspects such as Security, Catering, Media, Promotions are just a few of the many groups involved.

When you visit Melbourne Park you will see literally hundreds of portable radios in use, so it's a good idea to take the scanner and earpiece along to keep up with what's happening on and off the courts.

St John Ambulance provides a crew of people each year for this event, and you will be able to hear them on:

469.525	Channel 3	Primary Operations
470.400	Channel 2	Secondary channel

The callsigns to listen for are:

Network Control	Flinders 100
Duty Officer	Flinders 150
Assistant Duty Officer	Flinders 151
Concourse Control Officer	Flinders 152
Annex Control Officer	Flinders 500
Response Team	Flinders 589
Registered Nurse(s)	Flinders 600,601 etc
Patrols	Flinders 501 to 508

The **Victoria Police** also sets up a temporary office each year at Melbourne Park for the co-ordination of its duties, and you will hear them on 468.425, which is Police channel 24.

The call signs to listen out for are:

Field Commander	Blue 143
Acting Sergeant	Blue 800
Sergeant	Blue 801
Constables	Blue 810, 820, 830, 840
St John Ambulance Liaison	St John 900
Fire Indicator Board	FIB 900

The **National Tennis Centre** has the following allocations:

475.050 - Channel 1
475.125 - Channel 2
471.875 - Channel 3
474.975 - Channel 4
473.400 - Channel 5
473.825 - Channel 6

Security

On the channels listed above you will find the numerous people involved in security, parking, catering, administration and other services directly involved in the Tennis Centre structure. Last year, Channel 1 was used as a Liaison channel between Tennis Centre officials and Police, Fire and Ambulance services.

Australian Open Management Team

Putting this event on doesn't just happen overnight. It takes almost 12 months to put all the pieces into place, and the management team which works with this event deserves all the credit it receives.

The hundreds of support staff for the event rely very heavily on Motorola's proprietary 'SmartNet' trunking system operating in the 800 MHz band due to its superior coverage, and even though the tennis centre is close to the city, getting radio signals into there from outside base stations can be tricky. The Motorola system is up to the task and services every little nook and cranny within the huge concrete and steel structure.

You will hear the management group on any one of the following trunking frequencies. It's not easy to monitor them, but if you want to give it a go, try these:

865.0125, 865.0375, 865.0625, 865.0625, 865.0875, 865.1125, 865.2625, 865.2875, 865.3125, 865.3375, 865.3625, 865.5125, 865.5375, 865.5375, 865.5625, 865.5875, 865.6125, 865.7625, 865.7875, 865.8125, 865.8375, 865.8625, 866.0125, 866.0375, 866.0625, 866.0625, 866.0625, 866.0875, 866.1125, 866.2625, 866.2875, 866.3125, 866.3375, 866.3625, 866.5125, 866.5375, 866.5375, 866.5625, 866.5875, 866.6125, 866.7625, 866.7725, 866.7875, 866.8125, 866.8375, 866.8625, 867.0125, 867.0375, 867.0625, 867.0625, 867.0625, 867.0875, 867.1125, 867.2625, 867.2875, 867.3125, 867.3375, 867.3625, 867.5125, 867.5275, 867.5375, 867.5475, 867.5575, 867.5625, 867.5875, 867.6125, 867.7625, 867.7875, 867.8125, 867.8375, 867.8625, 868.0125, 868.0375, 868.0625, 868.0625, 868.0875, 868.1125, 868.2625, 868.2875, 868.3125, 868.3375, 868.3625, 868.5125, 868.5175, 868.5375, 868.5375, 868.5625, 868.5875, 868.6125, 868.7625, 868.7875, 868.8125, 868.8375, 868.8625, 869.0125, 869.0375, 869.0625, 869.0625, 869.0875, 869.1125, 869.2625, 869.2875, 869.3125, 869.3375, 869.3475

Note that the 'SmartNet' system is capable of direct telephone interconnect and, as such, we should remind you that, under the Australian Communications Interception Act, you must not monitor *any* transmissions carrying *any* telephone traffic.

Telstra In Tasmania

Down on the apple isle, Telstra has replaced its old VHF Low Band radio system with a new VHF High Band system using a complex system of multiple voting base stations providing almost total state-wide coverage.

The new channel band plan looks something like this:

Channel 1	162.9125	162.9750	162.9875	163.1000
Channel 2	162.9000	162.9125	163.1125	163.6625
Channel 3	162.9125	162.9750	163.6625	164.1875
Channel 4	162.9000	162.9750	164.1625	164.1875

Australian Tennis Open Television Coverage — HSV 7

Melbourne's Channel 7 provides an extremely comprehensive television coverage for the two weeks of the Australian Open, broadcasting day and night to ensure the viewing public gets to see as much as humanly possible. An event of this size requires the services of hundreds of behind-the-scenes people for the broadcast, both at the Tennis Centre and back at the studio to actually get the vision to air.

Here are some of the HSV-7 allocations which will get hot use during the intense fortnight:

162.0875 MHz	Duplex	Engineering/Outside Broadcast	High Power
215.500 MHz	Simplex	Radio Microphone	Low Power
216.250 MHz	Simplex	Radio Microphone	Low Power
217.500 MHz	Simplex	Radio Microphone	Low Power
219.100 MHz	Simplex	Radio Microphone	Low Power
221.250 MHz	Simplex	Radio Microphone	Low Power
419.125 MHz	Duplex	News	High Power
419.300 MHz	Duplex	News	High Power
470.625 MHz	Duplex	Talkback	Low Power
485.275 MHz	Duplex	Talkback	Low Power
485.400 MHz	Duplex	Talkback	Low Power
485.450 MHz	Duplex	Talkback	Low Power
485.750 MHz	Duplex	Talkback	Low Power
487.825 MHz	Duplex	Talkback	Low Power
491.750 MHz	Duplex	Engineering/Outside Broadcast	High Power

These channels are voting channels with the mobile and portables set up to 'Vote' on the appropriate channels to obtain the highest possible quality signal at all times. Then there are the simplex allocations:

Channel 11	162.9875	Channel 12	162.9125
Channel 13	162.9750	Channel 14	162.9875
Channel 15	163.1000	Channel 16	163.6625
Channel 17	164.1625	Channel 18	164.1875

The simplex channels, I assume, would be used for local Car-to-Car communications when in the field.

The network has been running for some time now, and thanks to Colin P from Hobart for his assistance in locating these channels. Another victory for an OptoElectronics Scout 40 and an AOR AR-8000 portable scanner!

Bathurst 1996 Update

Speaking of victories with Scouts and portable scanners, my article in the October issue received a lot of feedback, both confirming the published frequencies and also offering a few more that I did not have:

76.775	Ambulance Medical Centre
493.500	Fire Centre Control

(The above freq licensed to many communications companies)

493.825	Race Control
494.200	Sector Race Control
494.250	Rescue Vehicle Control
498.700	Fire and Chase Vehicles
499.025	Race Timing
499.400	Course Car
499.450	Towing and Rescue

Apart from the first two, all of the above frequencies are licensed to Belgrave 2-Way Radio.

Thanks to C Pugh and Darren Millett for those additions, and I hope you enjoyed the race. Darren is a terrific source of those little 'extra' bits of information.

So keep these frequencies also handy for the 1997 Big Race.

Pay TV monitoring

The **Pay TV** business in Australia is *big* business and, as such, **Foxtel** has invested heavily in projects such as its Fox Sport channel. For the major sporting events covered by Fox Sport, keep these frequencies handy:

462.0625	New South Wales-wide
462.9875	New South Wales-wide
463.2000	Pier 8 Pyrmont, New South Wales
463.3000	Pier 8 Pyrmont, New South Wales
463.4750	Pier 8 Pyrmont, New South Wales
472.5000	Australia-wide
486.1750	Australia-wide
486.3750	Australia-wide
493.4500	Australia-wide
500.0375	New South Wales-wide

The Australia-wide frequencies are used across Australia by many other television stations or outside broadcast companies, so they are good ones to keep handy for all sporting events.

I am receiving a lot of requests from people for frequency information. Where possible I reply within a few days, however if you expect a written reply please include a stamped, self-addressed envelope. If you have access to an internet account, feel free to send email to me **michael@tbsa.com.au**

Well, that lot should keep you amused for quite a while! Until next month, happy listening, gang.

Some information used in this column has been obtained from the Spectrum Management Agency's AFAD Database Copyright© Commonwealth of Australia.

Monitoring summer fun

Now that the weather is warming up, the activities on the waterways around Australia will be kicking ahead. The VHF Marine channels are good to monitor to hear what is happening on the water from both a commercial activities level and also from pleasure craft. The Australian band plan is:

Ch	Base RX	Base TX	Channel is normally used for...
01	156.050	160.650	General Marine Use Channel
02	156.100	160.700	General Marine Use Channel
03	156.150	160.750	General Marine Use Channel
04	156.200	160.800	General Marine Use Channel
05	156.250	160.850	General Marine Use Channel
06	156.300	156.300	Port Operations, Search and Rescue, Commercial
07	156.350	160.950	General Marine Use Channel
08	156.400	156.400	Port Operations, Commercial
09	156.450	156.450	Port Operations
10	156.500	156.500	Port Operations
11	156.550	156.550	Port Operations
12	156.600	156.600	Port Operations
13	156.650	156.650	Port Operations
14	156.700	156.700	Port Operations
15	156.750	156.750	General Marine Use Channel
16	156.800	156.800	Emergency Channel and Safety
17	156.850	160.850	General Marine Use Channel
18	156.900	161.500	General Marine Use Channel
19	156.950	161.550	General Marine Use Channel
20	157.000	161.600	Port Operations
21	157.050	161.650	General Marine Use Channel
22	157.100	161.700	General Marine Use Channel
23	157.150	161.750	Maritime Telephone Services
24	157.200	161.800	Maritime Telephone Services
25	157.250	161.850	Maritime Telephone Services
26	157.300	161.900	Maritime Telephone Services
27	157.350	161.950	Maritime Telephone Services
28	157.400	162.000	Maritime Telephone Services
60	156.025	160.625	General Marine Use Channel
61	156.075	160.670	General Marine Use Channel
62	156.125	160.725	General Marine Use Channel
63	156.175	160.775	General Marine Use Channel
64	156.225	160.825	General Marine Use Channel
65	156.275	160.875	General Marine Use Channel
66	156.325	160.925	General Marine Use Channel
67	156.375	156.375	Emergency Channel and Safety
68	156.425	156.425	Port Operations
69	156.475	156.475	General Marine Use Channel
70	156.525	156.525	General Marine Use Channel
71	156.575	156.575	Professional Fishing Craft
72	156.625	156.625	Yachts, Commercial, Port Ops, Pro Fishing
73	156.675	156.675	Non Commercial, Yachts
74	156.725	156.725	Commercial
75	156.775	156.775	General Marine Use Channel
76	156.825	156.825	General Marine Use Channel
77	156.875	156.875	Yachts, Professional Fishing
78	156.925	161.525	Commercial
79	156.975	161.575	Port Operations
80	157.025	161.625	General Marine Use Channel
81	157.075	161.675	General Marine Use Channel
82	157.125	161.725	General Marine Use Channel
83	157.175	161.775	General Marine Use Channel
84	157.225	161.825	General Marine Use Channel
85	157.275	161.875	General Marine Use Channel
86	157.325	161.925	General Marine Use Channel
87	157.375	161.975	Maritime Telephone Services
88	157.425	162.025	General Marine Use Channel

Australia also utilises the 27MHz HF marine band, as well as a number of other HF channels which are easily heard around the country by interested listeners. We'll present these interesting frequencies for you next month.

Icom IC-R8500

A new high-spec communications receiver

HF evaluation by Craig Seager
VHF and UHF evaluation by Russell Bryant
Introduced and compiled by Chris Edmondson

Quite a few years ago Japan's Icom Inc earned itself a deserved reputation as a 'serious' manufacturer of quality communications equipment. It has a full range of amateur and SWL products, plus entries in the unique-to-Oz UHF CB band and a good range of commercial, marine and aeronautical transceivers.

Its receivers have a deservedly high reputation, too. At the time when amateurs were falling all over mainstream HF models like the IC-735, SWLs and scan fans were drooling over impressive gear like the IC-R70 and IC-R71, the amazing IC-R7000 and other strong performers. And then came the IC-R9000.

Reviewers around the globe reached for the Thesaurus looking for new words to describe the IC-R9000 when it arrived, as it offered every conceivable feature to the purchaser. So *many* features, in fact, that it was very expensive indeed from the outset, and now costs well in excess of $10,000.

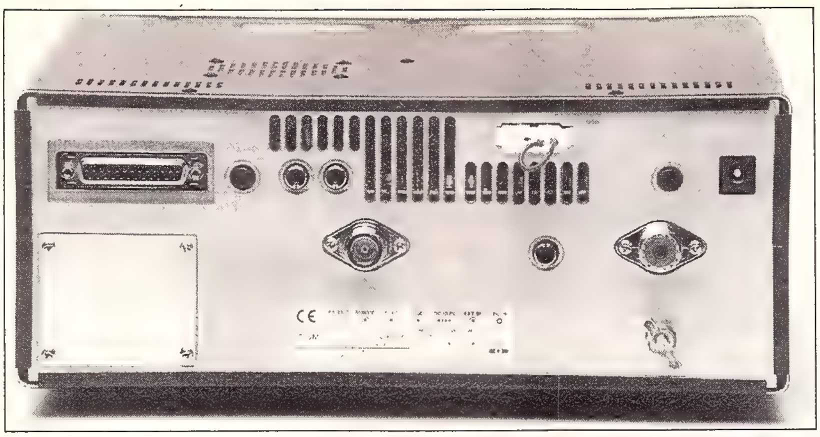
But Icom also wanted to address the 'real world' receiver users, too. Clearly, few customers could afford the steep asking price of the top receiver, and the all-new IC-R8500 has been released to plug the gap. For just $3400 or so, as near as dammit to $10,000 less than the receiver it replaces…

To find out how good it is, we engaged not one but two reviewers to examine the newcomer. After all, if we'd handed it to a keen scanner user, its HF performance may have been overlooked. And a keen SWL may have glossed over its abilities up high. Anyway, they needed the right antennas to stretch this guy's legs.

So we sent it to both. Our **SWL Notes** commentator, Craig Seager, has excellent credentials to look at a top-shelf shortwave receiver, while **Scanning Secrets** columnist Russell Bryant is a self-confessed scanner freak.

We asked both to discuss the merits of this receiver at their primary field of interest. The following article uses words from both of them, then we'll pass over to each for brief SWL's and scannist's evaluations. As you read the story, keep that $10,000 saving firmly in mind. All you've lost is the IC-R9000's TV screen!

By the way, the two reviewers also drove a couple of hundred kilometres each to meet up in person and pass the receiver from one to the other. Thanks, boys…



CS: Japan's Icom Inc is certainly no 'new boy on the block' when it comes to the manufacture of high quality communications receivers. Models such as the IC-R70 and IC-R71 spring to mind readily as serious contenders in the all-time favourites stakes among discerning shortwave hobbyists.

Then in 1990, we witnessed the entry of the IC-R9000, a grandiose effort also boasting VHF and UHF coverage and a TV-style video display that provides all sorts of operating data plus user-defined spectrum analysis in real-time.

As we discovered in Chris Edmondson's 1990 review in *Amateur Radio Action*, the IC-R9000 came close to representing the ultimate in receiver performance and features, probably finding its niche in the professional monitoring category. Most of us, however, will never find this out first hand, for such a receiver is almost second mortgage territory for working souls. These days it has a retail price well in excess of $10,000.

But never fear! The boffins at Icom have now released another all-band set, somewhat more within reach financially, but still managing to offer a variety of powerful attributes. The Icom IC-R8500 is a high-specification communications receiver, which takes in all of the long wave, medium wave, shortwave and VHF bands, in addition to the most useful portion of the UHF spectrum.

The IC-R8500 is a quantum leap in communications receiver technology. Relative to that technology, the IC-R8500 is set to furnish the serious listener with a host of features that only Icom can provide, yet at a price which makes it possible to consider. The newcomer bears little resemblance to any previous Icom receiver — its ergonomic design, subtle tones of grey and black and a thankfully large LCD display, set it apart from any other receiver on the market today.

However, there is more to the IC-R8500 than simply good looks. The unit supports continuous frequency coverage from 100 kHz to 1999.99999 MHz, with four reception modes. The usual AM and FM for broadcast and two-way radio transmissions, wide-band FM, (150 kHz), for receiving television audio carriers and FM broadcast services and, finally, SSB and CW, (2.2 kHz), for HF and VHF DX listening.

In order to maximise listening potential, additional filtering is provided for FM and AM modes. The operator can choose between FM, with 12 kHz bandwidth, and FM-narrow, at 5.5 kHz. Then there's AM at 5.5 kHz bandwidth, AM-narrow at 2.2 kHz, and AM-wide at 12 kHz.

RB: The LCD display is large and highly detailed. For example, should you choose the narrow band 5.5 kHz filter for FM reception, the Icom's LCD indicates that preference in the lower portion of the screen with a large 'N' and a narrow band icon. Other bandwidths displayed in a similar manner are 'M' medium and 'W' for wide. There can be absolutely no mistake as to which bandwidth has been selected. Further LCD indicators are attenuator setting, delay duration, tuning step increment, memory name indicators, AGC (Automatic Gain Control), bank numbers, select channel indicator and probably the most important — frequency readout.

The real measure of any radio is how it performs. The Icom is an excellent performer. The quality of the audio from the top-mounted speaker can be enhanced by using the APF or Audio Peak Filter. The user can adjust the APF setting to select the desired audio frequency. To my ears it enables a better tonal quality to be delivered. To quote the now-famous line, "...but wait, there's more..."!

The cook's tour...

CS: The IC-R8500 defies recent trends in a couple of ways. Firstly, it is larger than most receivers on today's market, taking up a reasonable amount of desktop real estate. Size is not a drawback, insofar as desktop operation is concerned, however the manufacturer also promotes the receiver as suitable for mobile operation (an optional bracket is available), to which its dimensions and 7kg weight would not readily lend itself in many vehicles.

Various controls reside on the front, including a large main tuning dial, AF Gain, Squelch, IF Shift, memory and scanning function keys, attenuator and mode buttons, as well as an alpha-numeric keypad. Others vary audio response, tuning speed, sleep/timer functions, and AGC attack speed. There is also an analogue S-meter, calibrated in standard units. Standard 3.5mm jacks are available for use with a tape recorder (including a remote socket), and connection of headphones via a 6mm phono accessory is also possible. The set operates on 13.8V DC, though it is not immediately obvious that a special jumper (provided) needs to be plugged in the rear when using the supplied AC adaptor.

The rear of the set has three antenna connections: 50 ohm for use with a PL-259 plug, 500 ohm for connection of a long wire or other high impedance device, and an N-type socket for VHF/UHF use. Choice of antennas is switchable from the front panel, and displays on the LCD. An RS-232C port is available for serial connection of a PC (and Icom will shortly release its own computer control software to go with it), along with ground, external speaker, AGC-out, IF-out and CI-V Remote for use in conjunction with an Icom CI-V system transceiver.

Five ways to scan...

RB: There is not one nor even two, but *five* basic scan functions. They are:

- **Memory Scan** — all memory channels (except channels locked out) in the selected bank are scanned at up to 40 channels per second.
- **Memory Select Scan** — allows specifically selected memory channels to be scanned, thereby increasing the rate at which the radio cycles through the nominated memory channels.
- **Programmed Scan** — search for signals within a specified frequency range, using the selected tuning step increments.
- **Auto Memory Write Scan** — operates in much the same way as Programmed Scan, however when a signal is received the frequency is automatically written into a memory channel, contained in the auto write bank.
- **Priority Scan** — monitor a specified frequency once every 1 to 16 seconds (user programmable) during any operation, such as scanning etc.

Memory Scan or Memory Select Scan have an additional feature that can be implemented to further enhance your listening pleasure: **Mode Select** allows the operator to scan only frequencies of a designated reception mode. Very handy if you have mixed modes within a given bank...

A socket for everyone...

Other sockets and connector found on the back of the rig are:

- **CI-V remote control jack** — permits the connection of an Icom CI-V equipped transceiver. It also allows connection of several receivers to a PC for command control via the optional CT-17 level converter.
- **IF Out jack** — delivers a 10.7 MHz IF with 9VDC for connection of the optional TV-R7100 television receive adaptor.
- **AGC jack** — again for connection of the optional TV-R7100 adaptor. Also outputs audio detected signal without de-emphasis for data detection.
- **13.8VDC jack** — for use when powering the receiver with the supplied DC cable.
- **External speaker jack** — requires an 8 ohm speaker.
- **DC jack** — for connection

....☞

An IC-R8500 for the hand...

Well, not quite, but Icom has finally released the long-awaited replacement for the IC-R1 — and the news is that it's terrific.

Covering 500kHz to 1300MHz in all modes — *all* modes — the all-new IC-R10 is easy to use, easy to program (*much* easier than the old IC-R1) and runs on inexpensive AA NiCd batteries rather than costly and hard-to-get shaped packs.

What surprised us was actually *hearing* international broadcasters and amateurs on the HF bands almost as well as the cops (and planes, trains and automobiles, and...).

Icom IC-R8500

A new high-spec comms receiver

...continued...

of the supplied AC adaptor. A word of warning here! A jumper plug has to be installed in the 13.8VDC socket otherwise the receiver will not power up when using the AC adaptor. This gives the impression that the radio has blown a fuse or similar and can scare the dickens out of the user, especially reviewers who don't read the owners manual first...

Optional extras...

CS: There are a few options available for the IC-R8500 at extra cost. These include a voice synthesiser unit that announces the tuned frequency (useful for the sight-impaired), a narrower filter for CW reception, and a temperature-compensating crystal oven for greater stability (needed only for the most demanding applications... data?). Additionally, this receiver is compatible with Icom's TV-R7100 TV Receive Adaptor, for connection to a suitable monitor. The adaptor plugs into the IC- R8500's IF and AGC output sockets at the rear of the set.

In the Driver's Seat.....

The basic receiver functions are quite intuitive, meaning you won't really need to read the manual until you start to explore the memory and scanning features in depth.

Tuning is achieved by the main rotary dial, the frequency changing in increments determined by the selected tuning step. Thirteen of these are preset, plus the user can program one of their own which then becomes the default at power-up. Preset steps are: 10, 50 and 100 Hz, 1, 2.5, 5, 9, 10, 12.5, 20, 25, 100 kHz and 1 MHz. It's refreshing to see both the 9 and 10 kHz steps present, useful for medium wave work where frequency spacing varies between ITU zones. A simple up/down button arrangement facilitates the choice, with the result displayed after the frequency.

A lock button prevents the frequency from accidentally being changed. This can also be programmed to 'freeze' the status of other front panel switches.

Keypad entry appears to be the most popular tuning method these days, and of course the IC-R8500 also offers this option. Entry is in MHz, including the decimal, with the [ENT] key depressed at the end.

Several modes and bandwidths are available for optimum resolution of the received signal, as shown below in **Table 1**.

The receiver offers a good selection of filters for both casual listening and more serious work. The AM Narrow/SSB filter of 2.2 kHz 'felt' a little wider than its nominal value, though this assessment is just that of the trained ear. In any event, anything up to 2.7 kHz (@-6dB) is generally adequate for intensive tropical bands monitoring.

Tweaking of the received signal is possible in several ways. Audio response can be adjusted using the APF (Audio Peak Filter), which adjusts the frequency of the received audio. Two separate filter widths are present when using AM /SSB or CW modes. The AGC time constant can also be altered in AM and SSB; 'Fast' is normally used for scanning and searching, whilst 'Slow' can be engaged when severe fading is not a factor.

A moderately effective noise blanker deals with pulse-type interference, such as that produced by car ignition systems, but on HF we found it generally ineffective against normal power line hash. I hope it isn't too far into the future when manufacturers begin to build DSP (Digital Signal Processing) technology into receivers in this price range, which can minimise different types of man-made and natural noise by adjusting the audio response characteristics after the amplifier stage. Expensive outboard units are the only option at present in all but the very top line receiver models.

IF Shift, but no Synchronous Detection....

One of the very nice gadgets on the IC-R8500 is the IF-Shift control. Sometimes known as passband tuning, this function electronically changes the centre of the intermediate frequency passband frequency in the CW and SSB modes, thus rejecting minor interference. Surprisingly, there is no notch filter (for reducing QRM from annoying heterodyne whistles), nor is there synchronous detection, which is fast becoming a requisite at the semi-professional end of the market. A synchronous detector 'locks on' to the station's carrier, ensuring more stable and interference-free reception. Some receiver models costing little over $1000 now possess this feature (*Radio and Communications* September 1996 issue carried an excellent article on the subject).

1000 memories.....

It's only a couple of years ago that 100 memory channels was thought to be over the top, but what does a SWL do with 1000?! No doubt there are applications... perhaps Russell will enlighten us. Eight-digit character memory names can be programmed into all 1000 channels, which are arranged into 20 user banks for more convenient recall. The banks can also be given a name of up to five characters (the default is USR-A to USR-T). Each channel can store mode information, a tuning step, and attenuation information.

RB: A total of 1000 memory channels can be used for storing frequency data, reception modes and tuning increments, as well as delay and attenuator settings. That's what the scannist would expect these days at the very least. Memory locations are more a channel personality, rather than simply a repository for frequency data.

CS: Happily, memory information does not evaporate if power is lost. Such information is stored in an EPROM, rather than the oft relied upon lithium backup battery arrangement favoured by some manufacturers. Programming the memories is where life starts to become a little complicated, and it takes a few runs through with the manual close at hand to perfect the process. Luckily, the 44-page manual is well written, and fairly comprehensive.

Microsoft Windows users will have little trouble grasping the concept of the 'Copy and Paste' feature, which allows editing of individual memory attributes, such as a frequency, whilst preserving other settings for that particular frequency. This is handy for shortwave broadcast listeners, where frequencies of one's favourite station may be subject to seasonal changes.

The highs and lows of antennas

RB: The rear panel of the IC-R8500 supports no less than eleven sockets and connectors. Probably the next most obvious protrusions are the three antenna sockets. The first is a regular SO239. An antenna of 50 ohms impedance and covering the frequency range up to 30 MHz can be attached to it. For frequencies above 30 MHz a high quality, low-loss N-type connector is supplied. Again the N has a nominal impedance of 50 ohms.

Not all aerials are rated at 50 ohms however; long-wires, suitable for reception to 30MHz or so can have an impedance varying from 300 to 600 ohms, making the normal antenna socket useless. To this end the IC-R8500 is equipped with a 500 ohm connector, appropriate to the task. Ideally, the receiver should be coupled to a good earth or ground, and a ground terminal is provided.

As would be expected with a unit like the IC-R8500, the A4-size operating manual covers every characteristic of the receiver in detail. Yet it is not overly technical, and could be understood by anyone with a the most basic knowledge of RF terms.

Scanning VHF and UHF...

RB: Programming my tried and true test frequencies into half a dozen memories took no time. I then manually skipped back and

MODE	**BANDWIDTH**
FM Normal	12 kHz/-6dB
Narrow	5.5 kHz/-6dB
Wide	150 kHz/-6dB
AM Medium	5.5 kHz/-6db
Wide	12 kHz/-6dB
Narrow	2.2 kHz/-6dB
SSB USB/LSB	2.2 kHz/-6dB
CW Normal	2.2 kHz/-6dB
Narrow (Opt)	0.5 kHz/-6dB

Table 1

forth amongst the UHF, VHF high-band and VHF mid-band spots. All of them, without exception, conveyed to the speaker clean and crisp transmissions free of interference and other noises. Selectivity and image problems are truly non-existent with the Icom IC-R8500.

My only reservation with the receiver is its conservative sensitivity figure on FM for frequencies between 30 and 1,000 MHz — in other words, the usual scanner range. At 0.5μV the rating could stand some improvement.

Listening on the HF bands...

CS: There are a number of standard tests that can be used in a well-equipped workshop to assess a receiver's performance, and the accuracy of the manufacturer's published specifications. To my mind it's just as valid to do an off-air user assessment with one's own ears against known benchmarks, which in this case were the other receivers on my desk, all of which are reliable workhorses despite their own particular limitations in certain areas.

The tropical bands of 60 and 90 metres are my favourite haunts, and at the height of the winter Latin American season, there are plenty of vague targets to zero in on. In practice, the Icom was able to hear anything that one would expect it to, including a couple of very weak Bolivians around 4700 kHz that a demonstrably inferior set had problems with.

Sensitivity is not really an issue with modern solid state receivers, however. Too much of it can be more of a problem than not enough; it is more how a set deals with a signal (weak or strong) that sets it apart from others. I did find that there were fewer intermodulation problems on medium wave with the IC-R8500 than with many of the mid-priced ($1200-1800) receivers on the market, yet the Icom appeared less 'deaf' on HF than some of the recent offerings from other stables.

Regrettably, manufacturers sometimes attempt to disguise poor front end design by toning down the sensitivity on medium wave. Areas of high field strength from local stations can and do quickly sort out the men from the boys in this respect. Whilst the Icom didn't display any major problems on medium wave, the 6 MHz shortwave band was a slightly different matter, particularly during mid-evenings when the band was crowded by strong Asians. A couple of unwanted spurs and mixing products emerged, something that could perhaps be reduced by using a dipole antenna rather than the primitive long wires that adorn my backyard.

Some of the best DX catches result from finding a heterodyne whistle just adjacent to a known frequency allocation. These often suggest a drifting regional broadcaster, perhaps in a less-developed part of the world, where the cost of spare parts prohibits a more stable frequency tenure. Then, also, come the deliberate split-frequencies employed by other broadcasters, which get them just that little bit further away from known interference sources.

Today's receiver needs to be able to separate two AM signals of fair strength at approximately 2.5 kHz spacing, even if this means utilising one of the side bands to reduce the splatter. The IC-R8500 will do this using its narrowest IF bandwidth, though perhaps not quite as well as one might expect for the quoted specification.

My Yaesu FRG-100, for example, made a better job of separating Radio Republik Indonesia Biak on 6153 kHz from the strong Radio Singapore on adjacent 6155 kHz. The Icom's saving grace in this situation was the IF Shift control, used in conjunction with the Audio Peaking Filter knob, which in the end made each station just as listenable as on the Yaesu.

Audio quality is quite impressive, especially in Wide Band FM mode, though the output to both speaker and headphones is monaural. As previously stated, most operations are easy, though some practice is needed with the memory and scanning functions.

Compared to the AOR AR5000...

It's difficult to avoid the obvious comparisons with the other new receiver in this price bracket, the AOR AR5000, however without putting the two head to head, impressions cannot be put to the acid test. A feeling I gained is that the Icom can be considered a high end shortwave receiver, with the added bonus of fully-featured scanning and receiving features on VHF and UHF. The AOR on the other hand is an intricate and multi-featured VHF/UHF scanner with very creditable HF performance.

The preference will generally be angled to whichever of the two fields one leans towards and to what aspect each manufacturer's reputation is more attributable. Icom excels in the HF transceiver and receiver market, whilst AOR is almost unparalleled in the scanner world. The AR5000 has a 10dB preamp; the Icom doesn't. The IC-R8500 has an IF shift control, whilst AOR has opted to leave this out.

Neither boasts a notch filter or synchronous detection, the inclusion of which would threaten the market share of the big guns in HF receivers, the Drake R8A and JRC NRD-535D. Prominent in the UHF enthusiast's mind would be the increased coverage of the AOR (up to 2.6 GHz) but the Icom has what on quoted specifications is a sharper, narrow IF bandwidth. These are all important aspects that would occupy the mind of a prospective buyer, but are by no means the only factors.

In summary...

RB: Icom offers a professional quality receiver with many features and functions rarely seen on this type of communications equipment. It covers every frequency of even remote interest to the scanner user, and has a most impressive appearance, but I wish it were just a little more sensitive in the FM mode in the commercial areas of the spectrum. At just under $4,000, the Icom IC-R8500 is for the more affluent amongst us.

CS: The Icom IC-R8500 gives good all-round performance throughout its frequency range, and has a number of useful 'extra features' to give added appeal. Performance may fall just a little short of the top-line HF-only receivers, but the added attraction of VHF and UHF coverage puts this model in a category where it has few serious competitors.

Radio and Communications *thanks* ***Icom Australia*** *for the loan of the review receiver.*

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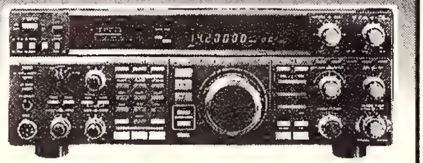

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BEAM ME out GLADESVILLE

There's a lot more to amateur radio than just DXing as Jack Haden discovers on a visit to Channel 35 TV operated by the Gladesville Amateur Radio Club

In reality, amateur radio is a very diverse hobby although many people believe that amateurs are really CBers — and vice versa — and that's pretty much it.

Even those with sufficient knowledge to differentiate between CB and amateur radio generally believe that amateurs are simply DX fanatics who pursue their targets on the HF bands or just waste time 'chewing the fat' on the VHF and UHF FM repeaters.

It's not until one really takes the time to *look* at the amateur radio hobby in its many various categories that we can truly appreciate what the hobby has to offer.

Most of us know about RTTY, AMTOR, Packet (and sundry other non-voice modes of communication) and EME amongst others.

There are not too many hobbies where you get the chance to talk to astronauts orbiting the earth on the space shuttle or the Soviet MIR station — try doing *that* on the Internet!

However, the facet I wish to talk about in this article is another variation of ATV (Amateur Television) and how a small group of Sydney radio amateurs and TV enthusiasts are going public with ATV and the hobby in general.

Enter the **Technology Station**, the official slogan of channel 35 television — better known as Television-Gladesville — transmitting fast-scan test transmissions three nights a week from the Sydney suburb of Lane Cove. Not to be confused with SSTV (Slow Scan TV) — on which we have the second of a series of articles this month — Television-Gladesville can be found on the public UHF TV channel 35 band allocation on 576.25MHz, not far up the band from SBS-TV on channel 28 (527.25MHz) and Community-TV Channel 31 (548.25MHz).

Television-Gladesville was originally formed back in the early 1980s by John VK2XY, Eric VK2WH, David VK2NH, Ron VK2GO, Jim VK2QA, David VK2ZNO and David VK2PX who all shared a common interest of education via TV.

Current TV co-ordinator, Keith VK2ZZO, entered the scene a few weeks later and remains with the station to the present day.

The first transmitter site was located at the Lane Cove West industrial park in the early '80s with minimal equipment.

The original transmitter was a Fuba valve output stage with only 20 watts into a four-bay wheel antenna. Today, the antenna is a four-bay slot antenna and the current site is at Lane Cove with 100 watts. Commencing in 1987, the club started with a basic two camera studio and borrowed production equipment (vision mixer, video typewriter, video/audio distribution amplifiers, etc).

Today, the equipment has progressed to the current four camera studio with all equipment donated or purchased by GARC. This equipment is stripped and subjected to a rebuild by the team prior to recommencing service and thus a certain element of home-brewing exists. This in turn creates an ideal environment for hands-on experience in the electronics world by both the members and volunteers of GARC alike.

When I recently visited the station, I was most impressed with the professional standard exhibited by the crew and I think that I could be excused for thinking I was in the studios of one of our national TV broadcasters. Dedication, pride and a satisfaction derived from doing the job properly was very evident amongst the team.

Although quite a number of the current team are not radio amateurs, the professionalism is still there.

The hard work and effort, all performed voluntarily, that goes into the live Wednesday night test transmission is indeed a credit to all involved.

On-air presenter, Trudy Thiele, does a great job at reading the news and transmission schedule with the poise of a commercial station newsreader — it's not surprising that some of the Television-Gladesville crew end up working for the commercial networks!

Camera work is far from easy, although Pat VK2JPA on camera three, and Murray VK2KGM on number two, made it look easy to a layman like myself.

Pat wasn't too pleased with camera she started on and it was clear she has a favourite camera; her anxiety to swap over created some amusement for all present.

Meanwhile, out in the heat and hum of the rather cramped control room, Tim VK2ZTM was making last minute adjustments to a large panel crammed with numerous levers, knobs and meters. Tim was soon joined by Jens Mosegaard and final adjustments were carried out between the two of them.

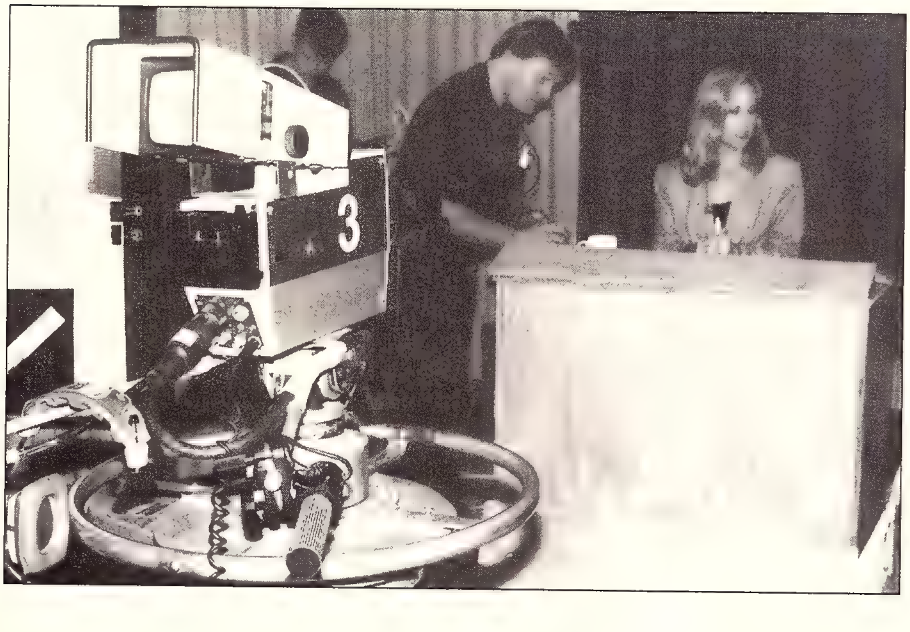
The job of Floor Manager is never easy; it's demanding and requires your 100 per cent attention.

Blake Heaton, who doubles as a locomotive driver with the NSW State Rail Authority, was forever on the move. Blake was darting about the studio making sure all was in place before the video segment ended and the cameras crossed live to Trudy. For the rest of the time he was my tour guide, making sure I didn't bump anything or accidentally press any buttons!

Looking about the Channel 35 complex in general, you would be hard pressed to find a connection with amateur radio. Except for a small shelf with some VHF gear mounted, the situation is more indicative of a public broadcaster.

Although somewhat cramped in places, things seem to run very smoothly with a minimum of bother.

Although there's group input, program content is strictly controlled by Keith and a variety of material is transmitted, some relating to amateur radio topics while others are more technology-related — hence the slogan of Television-Gladesville, The



The Presenter for Channel 35 TV is Trudy Thiele, seen here getting ready for the evening broadcast.

Technology Station.

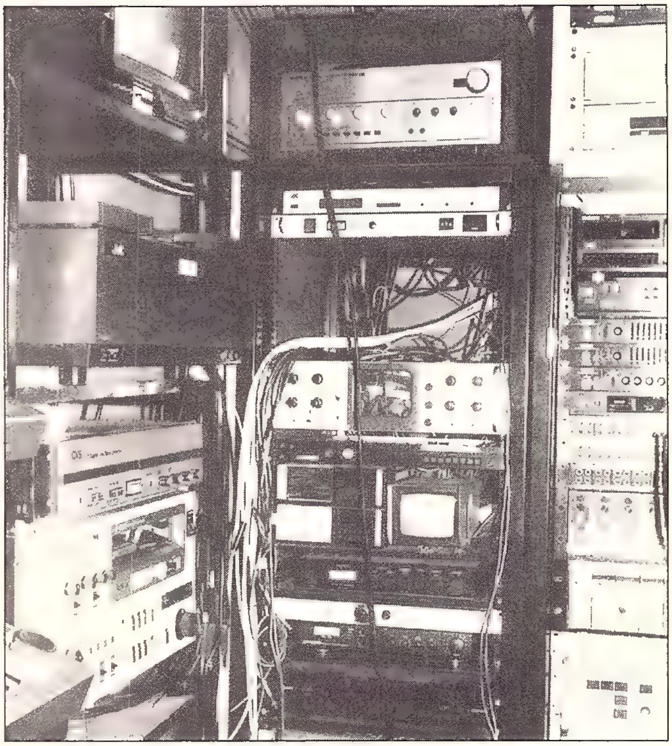
In the near future Keith hopes to expand the range of scheduled content for the test transmissions. most likely after the antenna is transferred to the much higher and better site at nearby Gore Hill (hopefully, this will be in place as you read this) via a relay link from Lane Cove.

It's surprising that other television buffs in amateur radio haven't attempted to duplicate the successful Television-Gladesville format in other Australian cities — as far as we are aware this is unique to Sydney and the Gladesville Amateur Radio Club.

Perhaps interstate amateurs cannot be bothered to take this opportunity although access is readily available?

Response from the viewing audience has been very positive, although there's some complaint concerning poor picture quality due to the stations low power. Overall, however, the comments from the public have been very encouraging. Viewers on the NSW central coast can view Television-Gladesville via the relay on the Central Coast Amateur Radio Club ATV facility VK2RTG located at Kariong on UHF channel 16 (444.250MHz) on Wednesday (7.30pm to 10.00pm) and Sunday (7.00pm to 10.00pm) nights. Credit for this operation can be attributed to the Australian Amateur Television Club via their repeater VK2RFM at Oakdale in Sydney's south west, with the output frequency being 1250MHz FM.

The Television-Gladesville Friday test transmission from 6.30pm to 10.00pm is radiated in the Sydney region only.



Now *that's* starting to look more like an amateur shack – the 'operations room' (one of three) at Channel 35 TV - GARC.

GARC hopes (in the not too distant future) to expand TV-Gladesville transmissions to Newcastle and Orange amongst other regional centres in NSW.

As the Gladesville Amateur Radio Club receives no funding from outside sources whatsoever, credit must also be given to other radio amateurs with an interest in bringing amateur radio to the pubic via fast-scan amateur TV on the UHF TV band.

My special thanks go to Keith VK2ZZO and the team at Television-Gladesville for allowing me to inspect the facilities at such short notice and for sharing their enthusiasm about this unique part of the amateur radio hobby.

Further information on Television Gladesville can be obtained by writing to PO Box 48, Gladesville, NSW 2111 or by telephoning the club in Sydney direct on (02) 9427 0530.

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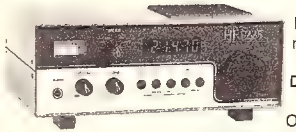

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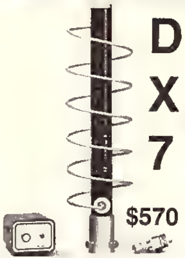

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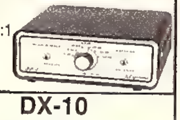

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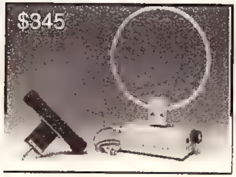

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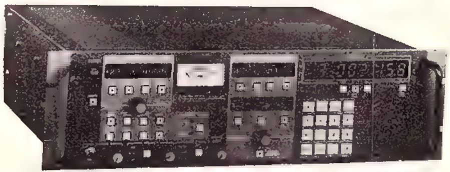

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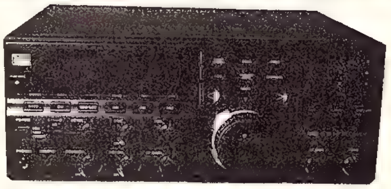

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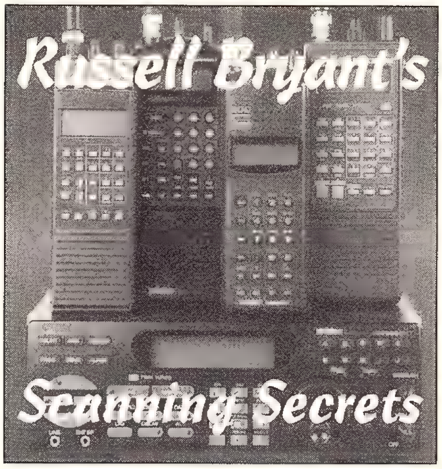

This month's topic: *Scannerspeak — A glossary of scanner terminology.*

A hard-core addiction...

Scanning is the type of hobby that requires no training; there are no exams to sit or probationary periods to serve. The only equipment required is the scanner itself. After a while, what started out as a curiosity, becomes a full on, hard-core addiction.

I have been addicted for over two decades. I started out using a tunable, 'public safety' radio designed and built for the US market. From there I moved to crystal-locked units, eventually purchasing my first programmable scanner way back in 1976.

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This article is not meant to be my life's story — what I am getting at is that in 20-odd years you learn a lot about a hobby, and scanning is no exception.

Therefore, in articles and columns I am inclined to use the terms and phrases with which I am familiar and which are universally-accepted throughout the hobby. While I make no apology for this, I tend to forget about the newcomer, or not so experienced scanner enthusiast who may not be so familiar. Which brings me to the subject of this month's column...

Learning 'scannerspeak'

Our topic for discussion is scanner terminology, jargon, language, lingo, call it what you will, it is all scannerspeak. Scanning shares many expressions with shortwave radio and two-way radio, however in this case I have structured the definitions to suit scanning, so they may not correspond strictly with convention. They are listed in alphabetical order.

Active antenna: an active antenna has built within it a wide-band radio frequency amplifier. The incoming signal is boosted or amplified thereby providing a stronger signal to the receiver.

Aerials: see Antenna.

Aeronautical mobile: frequencies allocated for the exclusive use of aircraft and associated services.

AF: audio frequencies. Frequencies within the range of hearing of the human ear.

Amateur Radio: a number of bands have been set aside for the exclusive or semi-exclusive use of amateurs. To become an amateur radio operator you must first sit and pass an examination as set down by the Spectrum Management Agency. Also sometimes called Ham Radio.

Amplitude modulation: normally referred to as AM. A method of imposing a signal onto a radio carrier. Services using AM include aircraft, 27 MHz Citizen Band, some amateur radio services and television video carriers.

Analogue: for the purposes of scanning, transmissions capable of being received by a scanner.

Antenna: the part of a radio system designed to radiate or receive electromagnetic waves (RF waves). Antennas come in many forms such as telescoping, helical, active, co-linear and beam.

Attenuator: a device, either internally or externally mounted, that reduces the level of an incoming signal, thereby reducing the amount of possible interference.

Audio output: the audio power output going to your scanner's speaker. This is usually expressed in watts or parts of a watt.

Band: a portion of the radio spectrum. For the purposes of scanning, the spectrum is taken to be from 30 kHz up to and including 2,000 MHz.

Birdies: a signal generated from within the scanner, that is manifested in various frequencies across the range of the scanner. Birdie signals will cause a scanner to stop on an invalid frequency when scanning or searching through the bands. To ascertain if a frequency is a birdie, remove the aerial. If the signal is still present, then chances are it is a birdie.

Carrier: an unmodulated electromagnetic (RF) wave generated by the transmitter stage of a radio, then fed into free space via the aerial.

Cell - 1: a part of a battery. Cells are divided into two groups, primary and secondary. Primary cells are those where the chemical reaction, (electricity-producing) cannot be reversed. Non-rechargeable batteries. Secondary cells are those where the chemical reaction can be reversed. Rechargeable batteries, including NiCds and the like.

Cell - 2: the coverage area of a single cellular telephone base transmitter.

Cellular telephones: these provide wireless telephony between land-based services and other cellular services. Two systems are available to subscribers: the analogue network uses 870-890 MHz, whereas the digital network operates on 935-960 MHz, base outputs. The monitoring of a cellular telephone conversation using a scanner or any kind of receiver is prohibited by law.

Channel: a position within the scanner where frequency data can be stored.

Citizens Band: two groups of 40 channels set aside for the exclusive use of CB operators. In the UHF band, the frequencies fall between 476.425 and 477.400 MHz in 25 kHz steps and in the HF band 26.965 to 27.405 MHz in 10 kHz steps.

Decibel: the difference between an RF or AF signal and a stated reference level. Usually expressed as **dB**. A dB reading of 3 corresponds to double the power rating.

Digital: for the purposes of scanning, these are binary radio transmissions that cannot be received by a scanner. GSM cellular telephones employ digital technology.

Discone: a broadband aerial, which can be used to transmit or receive signals over a wide frequency range. Most scanning discones have a bandwidth of around 400 MHz. That is, the effective extent of reception from the lowest to highest frequency.

Ducting: the correct name is **tropospheric ducting**. This is a propagation phenomenon which occurs when a high pressure ridge is compressed into a band of warm air covering a layer of cold air. Signals are 'trapped' within the duct and can travel hundreds of kilometres from their source.

Duplex: a form of radiocommunication where the base transmits on one frequency while it receives on another, usually through a repeater to permit a far greater transmission range than may normally be possible. (See also Full Duplex and Repeater entries.)

DX: long distance reception. While normally associated with HF and shortwave listening, DX also occurs on the low- and mid-VHF scanner bands, around 30 MHz to 80 MHz.

Full Duplex: a means of having two stations transmit at the same time. Usually through a repeater site, which allows simultaneous conversation at the same time as receiving. This is common to the cellular telephone networks.

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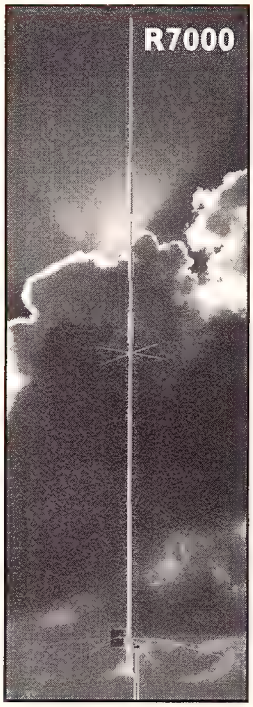

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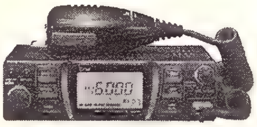
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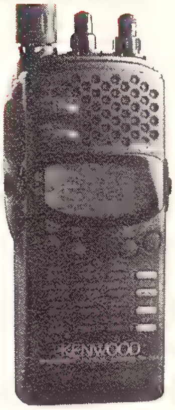
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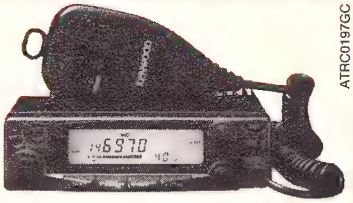
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Frequency Modulation: normally referred to as FM. A method of imposing a signal onto a radio carrier. Services using FM include most commercial two-way radio services, television audio carriers and broadcast services between 88-108 MHz. In scanning, FM can be expressed either as NFM or WFM. NFM or narrow FM is for two-way radio, WFM or wide FM for television and FM broadcasts.

Funnel effect: the amount of crap you have to put up with from certain people when you make an error.

Hertz: a unit of frequency, where one Hertz is one cycle per second. Usually expressed as Hz. (See also kHz and MHz.)

HF: see High Frequency.

High Band VHF: frequencies between 148 MHz and 175 MHz, also called A band.

High Frequency: frequencies between 3 MHz and 30 MHz.

IF: see Intermediate Frequency.

Image: a false or 'mirror-image' signal duplicated on a frequency elsewhere within the receiver, some distance from the genuine one. In the majority of instances, images are twice the first IF or Intermediate Frequency, plus the valid frequency.

Intermediate Frequency: scanners have either two or three IF stages. Received signals are converted to this frequency irrespective of the band or channel used, allowing a single stage to process a wide range of frequencies. This greatly improves a receiver's overall sensitivity.

kiloHertz: a unit of frequency, where one kiloHertz is one thousand cycles per second. Usually expressed as kHz.

Land Mobile: frequencies allocated for the exclusive use of terrestrial or land-based stations. It may. however, include aircraft and marine craft.

Low-band VHF: in Australia this term refers to those frequencies between 29.7 MHz and 45 MHz, however the convention in scanning is 30 MHz to 50 MHz, which corresponds to the American band plan.

Maritime Mobile: frequencies allocated for the exclusive use of marine craft and associated services.

MegaHertz: a unit of frequency, where one MegaHertz is one million cycles per second. Usually expressed as MHz.

Mid-band VHF: frequencies between 70 MHz and 88 MHz, also referred to as E band.

NiCd see entry directly below.

Nickel cadmium battery (NiCd, often incorrectly abbreviated as Nicad): Nickel Cadmium battery. A battery which can be re-charged many times over before it requires replacement.

Nickel metal hydride battery: A battery similar in properties to a NiCd cell, the NimH has a different chemical composition. The discharge characteristics of NimHs is more linear when compared to a NiCd, and it requires a completely different charging regime.

NimH see entry directly above.

Phase-Locked Loop: a section of a receiver's circuit consisting of a voltage-controlled oscillator which is mathematically divided and

Do you have slack knobs?

Owners of the AOR AR-8000 may have noticed their volume and squelch knobs have worked loose. The reason for this is basically due to the rubber compound used in their manufacture, it not being hard enough for the purpose.

There are two solutions to the problem: the first is replace the knobs with new ones. Replacements are available from Access Communications, PO Box 231, Northbridge 2063, telephone (02) 9417 5311, at $5ea plus postage.

The alternative is to apply a little elbow grease mixed with methylated spirits and silicon.

Remove the offending knobs and clean them with the methylated spirits, making sure to wipe the pot shafts. After the metho has dried, use a match stick or similar to apply a small amount of silicon to the pot shafts.

With the same match apply some silicon to the uppermost inside of the knobs, making certain to cover as much of the area as possible, creating a film within the cavity.

Return the knob to its rightful place atop the radio, allow it to dry overnight.

This should remove any slackness. The knobs can still be easily removed should you wish to replace them at a later stage.

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compared to a crystal reference. The comparator produces a control voltage which in turn controls the VCO or Voltage Controlled Oscillator.

PLL: see entry directly above.

Receiver: a radio capable only of receiving signals. Has no ability to transmit. In other words, a scanner or the like. A receiver licence granted under the Radiocommunications Act does not relate to a receiver intended only for radio or television reception.

Repeater: a repeater receives a signal on one frequency, then in real time transmits the received signal on a second frequency. They are generally located atop tall buildings or on mountains, where their signal will reach far further than a normal 'simplex' signal. Repeaters form the basis of most two-way radio systems.

Repeater talk around: Repeaters use two frequencies, one for transmit, the other for receive. 'Talk around' frequencies are normally the repeater transmit frequency, but used simplex.

RF: radio frequency. These are frequencies which cannot be heard by the human ear.

RX: an abbreviation for receive, received or reception. (Receiver is usually abbreviated to rcvr.)

Selectivity: a receiver's ability to discriminate between closely located signals.

Sensitivity: the minimum useable input signal required to activate the receiver. Sensitivity is usually shown as a decimal of a microvolt, such as .25µV or 1.0µV or similar. The lower the sensitivity figure, the more sensitive the radio. The mean sensitivity for a scanner should ideally be between .18µV to .5µV.

Simplex: radio signals transmitted and received on the same frequency.

SINAD: an acronym for the ratio between **SI**gnal, **N**oise **A**nd **D**istortion. A reference for the measurement of a receiver's sensitivity (eg 0.5µV @ 12dB SINAD). A standard reference measure.

Step: the increment between legitimate frequency allocations. For the VHF mid band, VHF high band and UHF band, 12.5 kHz is common. On the VHF and UHF aircraft channels use 50 kHz.

T Band UHF: frequencies between 403 MHz and 420 MHz.

TX: an abbreviation for transmit or transmitted. (Transmitter is usually xmtr.)

U BAND UHF: frequencies between 450 MHz and 470 MHz.

UHF: see Ultra High Frequency, below.

Ultra High Frequency: frequencies between 300 and 3,000MHz (3GHz).

Very High Frequency: frequencies between 30 MHz and 300 MHz.

VHF: see Very High Frequency, above.

W1 Band UHF: frequencies between 470 MHz and 500 MHz.

W2 Band UHF: frequencies between 500 MHz and 520 MHz.

While this is not the definitive dictionary of scanning terms, it should provide an insight to some of the nomenclature used here in *Radio and Communications*, and by those hard-core enthusiasts within the hobby.

Look up in the sky...

Half a dozen issues ago I made mention of a new monitoring group solely dedicated to the airbands. **AIRSCANCOMM** is a association of enthusiasts who are interested in all aspects of aeronautical communications, including HF, VHF, UHF and digital services such as ACARS.

The club plans to distribute amongst members a regular newsletter containing frequency lists, callsigns and other aspects of aircraft monitoring. If you would like further information on the activities of AIRSCANCOMM, write to PO Box 50, Dungog, NSW 2420, for an information kit.

A stamped self-addressed envelope would assist in expediting a reply. A frequency guide for eastern Australia is currently available at $17.50 posted for non-members and $12.50 posted for paid-up members.

Epilogue

Is there a topic you would discussed on these pages? Any comments you would like to make about anything to do with scanning? Why not put pen to paper and send it to Russell Bryant, PO Box 344, Springwood, NSW 2777

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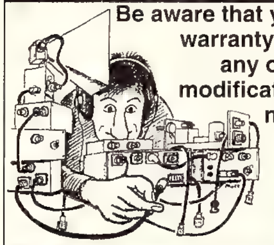
MODIFICATIONS



Be aware that you may void a warranty by performing any of the following modifications. R&C has not tested them and makes no warranty as to their serviceability.

Mods, Fixes and Updates

By Greg Towells, VK2GJT

Loads of things to do to the Kenwood TM-741A

Extended receive...

This mod is to enable extended receive for radios with additional modules other than the 144 and 430 MHz units which already have extended receive operational. This mod will give reception of 18 to 54 MHz for the 10m module, 40 to 90 MHz with the 6m module installed and 1100 to 1400 MHz with the 1.2 GHz module in place.

This is how:

Remove the front panel.

Disconnect front panel unit cable.

Remove two screws in front panel back and remove rear cover.

Locate and cut the green wire that is plainly visible. Reassemble the unit, and note that a CPU reset is *not* necessary.

Curing 'birdies'...

Are you hearing 'birdies' in the 430 MHz position on your Kenwood TM-741A? Some have had these problems, and it *is* a problem when they cannot be on another test bench. The problem appears either as weak wandering carriers, or intermods with other input signals. Seldom is the signal strength greater than S2, but the squelch stays open most of the time.

You are in luck. The problem apparently lies in instability in the RF front-end transistors Q1 and Q2, which are electronically switched out of the signal path by IC8 when out-of-band frequencies are selected. The solution appears to be placing a 220-ohm 1/4-watt resistor from pin 10 of IC8 to ground. This damping in what appears to be a signal leakage path prevents the instability or parasitic oscillations causing the problem.

It has also been noted that if the control head is modified for full-frequency operation the RF preamp is continuously removed from the signal path unless the green wire on the processor motherboard has been cut. During proper operation, pin-9 of IC8 should change state when tuning in-band as opposed to out-of-band.

AM reception with 28 and 50 MHz units...

Here is how to enable AM reception with the 28 and/or 50 MHz units installed:

Press the [F] key, then press [SHIFT] key within 10 seconds. An 'A' is displayed at the hundred-MHz position to indicate AM mode. To return to FM mode press the [F] again, then press the [SHIFT] within 10 seconds.

800/900 MHz band reception with 70cm unit...

As the title says, 800/900 MHz reception is possible with just a few keystrokes as well. Here's how to do it:

To change to the 900 MHz band, select the 430 MHz band, then press and hold down the [MHz] key for at least a second. You will find 850.000 (initial setting) is displayed. To return to the 430 MHz band, press the [MHz] key again for at least a second.

Adding an antenna connection for 800/900 MHz reception...

Remove the power supply cable from the power supply or battery. Remove the 430-MHz band unit with care. For removal procedure see the instruction manual under unit installation and simply reverse the procedure.

Remove the shield plate (12 screws.) Solder a short length of suitable shielded coaxial cable to the input side of IC9. The centre is aligned with the IC9, ground at right side. Pass the cable through the notch and install the shield plate.

Reassemble the main unit.

Memory channel doubling...

Each band can be switched to the normal memory (100 channels) and rear memory (100 channels). Each band can contain 200 channels and... yes, a total of *600 channels* can be used for three bands! Again, not any mention of it in the book...

Before carrying out this mod, you must have completed the procedure to give extended receive with 28/50 MHz modules as detailed earlier.

To switch the memory, hold down the [F] key and press the [REV] key: Normal Memory (100 ch) <--> Rear Memory (100 ch)

The functions of the rear memory are the same as the normal memory, but memory channels are displayed as follows (rather than 01 to 00):

A1 - b0 == 01 - 10
b1 - c0 == 11 - 20
c1 - d0 == 21 - 30
d1 - E0 == 31 - 40
E1 - F0 == 41 - 50
F1 - G0 == 51 - 60
G1 - h0 == 61 - 70
h1 - i0 == 71 - 80
i1 - J0 == 81 - 90
J1 - AA == 91 -100

Kenwood TH-79A loose antenna connector

If you find you are getting reports of scratchy audio on-air, and your antenna seems just a bit loose, read on. This could be the fix to your problem...

Open up the radio. Note that the screw under the speaker/mic jack cover is different from the others, and may require a different screwdriver. Also note that there is a tongue-and-groove arrangement on both sides of the battery compartment that you'll need to pop open gently. As explained below, *don't* attempt to slide the two halves of the case apart to open it up.

Upon opening the case into its two halves, you will find that the BNC is not attached to the same half of the case that the circuit board is attached to, leading to the unusual situation as described below. There is a heavily tinned wire coming out of the BNC which has a right angle in it. It doesn't appear to be flexible at all, which is good, as you'll see later.

The problem is that the other end of this wire isn't soldered to the circuit board. If it was, you wouldn't be able to open the case without breaking the wire off from the circuit board. Instead, apparently the wire just rests against a tiny contact pad on the circuit board. Very near to the contact pad is a equally tiny surface mount device of some kind, and the legs of an IC.

So imagine that you've got this wire finger sticking out and down from the back of the BNC connector, leading down to touch the surface of the circuit board, just between the tiny surface mount device and the IC legs. If that wire finger was able to wiggle the least little bit (it would need less than 2mm or so), it would intermittently short to either the neighbouring surface mount device or to one of the IC's legs, rather than connect to the tiny contact pad that it's supposed to be touching. Do you see the problem emerging?

And the bad news is, if you let it get bad enough, this is exactly what happens when the antenna connector comes loose. So how do we fix it? Glad you asked...

Open the case, and you will find the two halves are connected by a ribbon cable and three wires that are tied together. There's not *quite* enough slack in the cables to lay the halves of the case flat, so be careful you don't rip the cables out of their connectors.

You'll be able to see the bottoms (threads) of the two screws that hold down the antenna connector, but the heads are under a piece of plastic that surrounds the antenna connector and wraps around the top/back of the radio. To remove this plastic, first remove the antenna from the radio. You'll see that the plastic is held down by a thin piece of foam rubber that's stuck to it and to one of the metal RF shields. *Very gently* peel the foam rubber off the plastic piece you're trying to remove. It's really very easy to tear it, so work slowly.

Once you've got the foam rubber off, you can wiggle the plastic piece off, but you'll find that you need to remove the rubber O-ring from around the antenna connector first. Do that, then the plastic piece should come off easily, exposing the screws that need to be tightened.

Once you tighten the antenna connector screws, just reverse your procedure, and hopefully your radio will still work.

Remember the 'wire finger' sticking out of the back of the antenna connector? Make *very* sure that, when you put the two halves of the case back together, you get them lined up perfectly before you try to do the final closure. Otherwise you risk getting that wire finger touching that tiny surface mount component or the IC's legs that are very close by.

Have fun...

Repeater modification (transponder functions)...

The following mods detail cross-band and fixed band repeat modifications for the TM-741A. Care must be taken with transceiver operations after these following mods, as extended continuous transmission may cause failure of your gear. Be warned.

Firstly, you must carry out the hardware side of the operation. Take all the usual precautions for working with static sensitive components.

Loosen the four screws on the side of the set. Remove the four screws on the bottom of the set. Remove the bottom of the case. Locate the two jumpers on the Control Unit, on the opposite side of the panel. They are located on the same side of the control unit board as IC2.

Remove the blue chip jumper (Ø OHM). Use a soldering iron with a thin tip in order not to damage other components or patterns. Refit the rear of the case by reversing the order of disassembly.

Fixed-band repeater operation...

With the fixed-band repeater, the transmission band is fixed. If a signal comes in on the remaining band, the BUSY light turns on, the transmit mode is entered and modulation is done using the received signal.

If an optional band is present, turn off one of the three bands. Set the frequencies of two bands (rx/tx split are also permitted.) Set a band as the transmission (PTT display) and operation (green indicator) band by pressing the band select key.

Hold down the [F] key for at least a second (the red LED flashes), then press the [MUTE] key.

Cross-band repeater operation...

When the cross-band repeater function is being used, a signal enters one of two bands. The busy light turns on, the other band enters the transmit mode and modulation is done with the received signal.

Set the frequencies of two bands (rx/tx repeater split are also allowed.) Set a band as the transmit band (PTT display) and the other as the operation band (green indicator). This arrangement can be reversed.

Hold down the [F] key for at least a second (the red LED flashes), then press the [MUTE] key. The dots on both frequency display flash, and the cross-band repeater works. Only reception is possible in the remaining band.

Dual-in repeater operation (when the option band is installed)...

With the dual-in repeater, the transmit band is fixed, and if a signal comes in on either of the other bands, Busy turns on, transmit mode is entered and modulation is done using the received signal. Set the frequencies of all three bands. Set a band as the transmission (PTT display) and operation (green indicator) band (press the band select key.)

Hold down the [F] key for at least a second (the red LED flashes), then press the [MUTE] key. The dots on the frequency display light.

To disable repeater operation...

To turn the repeater off, hold down the [F] key for at least a second (the red LED flashes), then press the [MUTE] key. The state before setting returns.

Bass mod for the AOR AR3000A scanner

As has been seen in past editions of R&C, a lot can be done to the AOR AR3000A scanner in the way of mods and improvements. Here is another.

One defect this scanner has is that, to many users, its audio completely lacks bass in the AM/NFM/SSB/CW modes. Going by the service manual, this appears to be an intentional design thing.

The audio line passes through a notch filter, which is stated to be 300-3000Hz. The way to fix it is to remove that lower cutoff. You will find a much improved audio quality, if the lack of bass annoyed you in the first place.

The mod itself is simple, but involves working on surface-mount devices (SMD), so it's quite *delicate*. Do it at your risk. It is recommended to have a copy of the PC layouts and of the schematics from the service manual close at hand, in order to understand what you're doing.

The background to this mod is that the notch filter for AM/NFM/CW/SSB is built around the double op-amps in IC7-IC8 on the IF/audio board. The lower cutoff is determined primarily by R130 (10k), R139 (4.7k), C130 (22n), C131 (22n) and C137 (22n).

Basically, what has to be done — and experimentation is the name of the game here — is to remove R130, solder a 0.1μF condenser in parallel to C130 and C131, and to remove C137 by shunting it with a jumper. This is how to do it:

Unscrew the cover and open up the receiver. Unplug the loudspeaker connector. The audio/IF board is the lowest one, and has to be unscrewed and turned upside-down, so that the SMD side is accessible. To enable this, at least one of the coax connectors (J1, J10) has to be carefully unplugged.

Locate the components to be attacked (again, it's very handy to have a component layout close by at this stage). The region is on the SMD side opposite to IC9 on the component side. IC9 is recognisable since it is a voltage regulator, it has three pins, and it gets hot.

One idea is to turn the radio on, and to try to shunt C130 and C131 and C137 by leaning a 0.1μF condenser on the proper tin points, in order to locate them. Done correctly, this should result in richer basses in both cases.

Then unsolder R130 and C137. It requires a quick and firm hand since the components are less than 4mm long, and are glued to the board.

Solder a short shunt in place of C137. Solder a 0.1μF condenser (or greater) on the extremes of C130 and C131. A little ceramic one will do the job, even if it is not as neat as replacing with another SMD, there is plenty of room.

Rescrew, close, enjoy... Of course the effect is much better with an external speaker.

See you next time. Cheers 'til then.

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Heard Island DXpedition update

Here is the latest update on the Heard Island DXpedition:

We are now just 60 days away from sailing from Reunion Island aboard the *Marion Dufresne*, bound for Crozet, Heard, and Kerguelen. Half of our gear is already on the ship on Reunion, the other half due to arrive shortly.

We have nearly the entire original team intact, although a recent withdrawal has opened a position. You can see all the information about the project on the internet web pages at **http://www.ccnet.com/~cordell/HI**

The funding for the trip is about 90 per cent complete. We are now working to find the last 10 per cent — about $US30,000. We hope you might be able to help, either by being generous yourselves or by helping us to locate resources. We are open to the possibility of taking one or two 'guest sponsors.' These people would not have any formal duties and would not even have to be licensed radio amateurs, but would be financial supporters. If you have any suggestions, please contact us.

We are very interested in making best use of our time and resources, to best serve the amateur community. I would personally be interested in whether you need HI for DXCC, and to what extent you will be listening for us and trying to work us. I mainly want to get a better feeling for the audience, so we can be most responsive.

I have appended to this message a press release that was prepared by Bob Allphin, K4UEE and released recently.

Thanks for whatever help you may already have given. We're looking forward to making this an event to remember!

from Bob, KK6EK, expedition leader

Background

Preparations for the Heard Island DXpedition have been in high gear for most of the past year. Depending on the survey, Heard Island is either the #1 or #3 most-needed DXCC country and may represent the most difficult and complicated DXpedition ever attempted.

The 1995 attempt on Heard was aborted and resulted in financial disaster for the team. The project was then reorganised, and the team enlarged to 20 radio operators in order to reduce the cost per person. Additional equipment, procedures, and travel arrangements were included to

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ensure safety and success.

This project has been developed with the following principles foremost: 1) safety of the participants; 2) reliability of schedule and radio operations; 3) advancement of the art and science of DXing and DXpeditioning. To that end, we have opted for a large team, reliable (albeit expensive) transportation, and considerable backup gear and plans.

In Sep/Oct 1996, two 20 foot containers with almost 15 tons of equipment were shipped to Reunion Island, the jumping off point for the team. The gear includes complete life support and radio equipment for 20 persons for the two-week stay on Heard Island.

There are four shelters, 12 X 24ft each, for sleeping, eating, meeting, the satellite station, an HF station and storage. There are two additional shelters 8 X 8ft which will house two HF stations each. The radios are Yaesu FT-1000MPs, FT-900s and ETO 91B linears.

The team has shipped large quantities of antennas. Low-band antennas are mostly verticals including four-square arrays for 160, 80, 40 and 30m. On the higher bands, monobanders and tribanders will be employed. The reason for so many antennas is to have plenty of spares in case a major storm destroys some or all of the erected antennas.

The team

The DXpedition team has been essentially intact since it was formed in January, 1996. Currently it includes: EA8AFJ, HB9AHL, K0IR, K4UEE, K9AJ, KK6EK, N6EK, N6MZ, NP4IW, OE9AMJ, ON6TT, PA3DUU, RA3AUU, VK2TQM, W6OTC, W8FMG, WA6PUJ, WA3YVN, and 9V1YC. The DXpedition leaders believe they have assembled a great mix of phone, CW and RTTY operators with a bias toward Low Band (160, 80, 40 and 30m) operations.

The timing of this DXpedition is ideal for emphasising the Low Bands, as this winter will see the 'peak' of the low band propagation in the solar cycle. Good openings are anticipated on 20, 17, 15m as well with fair, sporadic openings on 12 and 10m.

Technology

Modern technology will be employed, much like the very successful 'DXpedition of the year – 1995' to Easter Island / Salas y Gomez (XR0Y/XR0Z). The team will log using a CT-network. Every day the logs will be uploaded via Pacsat to a central site for posting on the World Wide Web. Anyone will be able to enter basic information about a QSO, and receive confirmation that the QSO is in the log.

Extensive use of 'pilot' operators will help the Heard Island team gets feedback to ensure success of the DXpedition. The pilots will relay your input and suggestions to the Heard team on what can be done to improve performance and results. The Pilots are:

JH1ROJ: Isao (Japan & Asia)
K0EU: Randy (US Central)
N4PYD: Scotty (US South coast)
ON4UN: John (Europe & pilot coordinator)
WA2FIJ/6: Jay (US West coast)
WB2DND: Don (US East coast)
WD0AEK: Bob (US North coast)

Operating frequencies

	CW	SSB	RTTY
160M:	1.826.5	N/A	N/A
80M:	3.507/3.522	3.799	N/A
40M:	7.007	7.065	7.030
30M:	10.104		10.140
20M:	14.024	14.195	14.085
17M:	18.074	18.145	18.105
15M:	21.024	21.295	21.085
12M:	24.894	24.945	N/A
10M:	28.024	28.475	N/A

Schedule

The team will assemble on Reunion Island during the last week of December. On January 3, 1997, they will leave aboard the 300ft French vessel *Marion Dufresne* for a 10-day sail to Crozet and then Heard Island.

If weather permits, the equipment will be put on the island by helicopter; if not, it will be landed by boat. The stations will come on the air on or before January 15, using the callsign **VK0IR**.

The NCDXF 5-band HF beacon will be set to transmit continuously during the stay. Departure will occur on January 27, and after a brief stop on Kergulen will sail to Reunion, arriving on February 5. Due to the brevity of the stops on Crozet and Kergulen, operation from these islands is uncertain. However, operation from Reunion is planned both before departure and after the return.

Financing

The total budget for the expedition is $US320,000. Almost two-thirds of this cost involves transportation to Heard Island, which is remote from any normal shipping lanes. The balance of the budget is required for special gear and services, such as the shelters, food, fuel, and transportation of the equipment. An example of the high cost of this operation is the charge for shipping and storing the containers of gear — more than $US20,000.

Donations are greatly appreciated at one of the addresses listed below. Donations are not at risk. The expedition team is taking all financial responsibility until the expedition is completed. Should the project fail due to other than an Act of God, the donors monies will be returned.

Donations are gratefully accepted via:

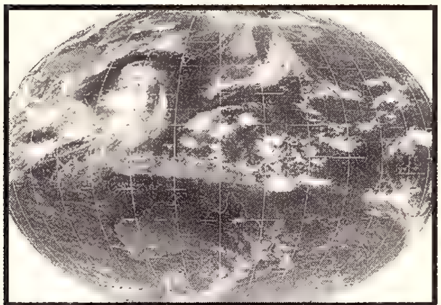
Heard Island DXpedition,
c/- Bob Allphin, K4UEE,
4235 Blackland Drive,
Marietta,
Georgia 30067
USA
His email address is **mallphin@aol.com**

Heard Island DXpedition,
c/- Peter Casier, ON6TT,
Oude Heerbaan 30B-9230,
Wetteren,
Belgium
His email address is **pcasier@innet.be**

The Heard Island DXpedition team is committed to carrying out this operation in an exemplary manner. Every effort will be made to ensure the maximum number of QSOs on as many bands and modes as possible while minimising interference to other amateur interests.

Your feedback and input through the Pilot operators is critical to this goal. What we learn through this project will aid others in carrying out operations in the field safely and reliably in the future, and will serve as a guide for those to follow. We hope you will enjoy and support this expedition, both with your QSOs and financially and will be proud to say "I helped make it happen...".

For the latest and most complete information about the DXpedition, dial up the Internet pages at: http://www.ccnet.com/~cordell/HI



WEFAX SATELLITES

By Arthur Andrews, VK2AAE
30 Araluen Road, Wollar 2850

Yes, yes, I know I sort-of signed off permanently last time, but I just couldn't help it. Mind you, it's only a short article this time due to pressure of work trying to prepare the land for the arrival of 600 olive trees for our experimental olive plantation. It's certainly a far cry from weather satellites, but they reckon variety is the spice of life.

At the time of writing, the weather satellite status was as follows:

NOAA 9. No APT or HRPT transmissions due to failure of equipment but some systems are still active.

NOAA 10. The APT transmissions are switched off but it continues to transmit HRPT images on 1698 MHz. Channel 1 and 2 visible and near visible light images are good, but the IR images on Channels 3, 4 and 5 are poor due to damage to the IR sensors by the sun.

NOAA 12 continues to transmit good images on 137.50 MHz (APT) and 1698 MHz (HRPT).

NOAA 13. Dead as a plucked duck (and they don't come much deader than that!).

NOAA 14 continues to transmit good images on 137.62 MHz (APT) and 1707 MHz (HRPT).

Meteor 2/21 continues to be used in conjunction with Meteor 3/5 and transmits on 137.850 MHz. Images are generally poor due to a fault in the equipment.

Meteor 3/5. This satellite, also transmitting on 137.85 MHz, produces spectacular images during the summer months when ground illumination is at its highest.

The Russian **OKEAN 4** and **SICH 1** satellites continue to transmit good imagery over Europe but are switched off when they pass over Australia. I have not heard of any reports of signals being received from these satellites but it pays to monitor 137.40 MHz in case they have been left on for some reason.

NOAA K, (**NOAA 15** if launched successfully), which was supposed to be launched during 1996 is now expected to be launched in early 1997.

The Russian **Meteor 3/6** satellite, which was launched a couple of years ago, has been reported as having failed in 1995. No wonder I never received anything from it!

The Japanese geostationary satellite **GMS 5** continues to function well. although some receivers are experiencing difficulties with sync.

In my early articles in the old ARA I mentioned that I was eagerly awaiting the launch of the first Chinese geostationary weather satellite **FENG YUNG 2A** which unfortunately never got off the ground (well. not very *far* off it anyway).

Its successor, **FENG YUNG 2B** is now nearing completion and may be ready for launch as early as the time you read this.

Let's hope they have more success with this one. If the launch is successful we will have two geostationary satellites to look at.

I believe that the transmission format will be the same as for GMS 5, which is a bonus for those with GMS receiving equipment.

Scanning the 137-138 MHz satellite band can sometimes prove interesting with signals being received from unknown (to me) satellites on odd frequencies. Most transmissions appear to be telemetry.

On reading the October issue of R&C, my interest was drawn to the article AR-3000 and AR-3000A mods, especially when it dealt adding a 50kHz filter for weather satellite reception. Great, I thought, it would be ideal for the VHF APT reception of orbiting satellites, however to my dismay I found that the author had fallen into the trap regarding geostationary weather satellite reception.

The author stated that "...the Wefax custom modification has been designed to optimise the receiver's passband for reception of orbital weather satellites in the VHF band around 137.50 MHz and *geostationary satellites in the UHF band around 1691 MHz...".* (My italics).

This must be about the fifth time over my series of articles that I have mentioned that the Japanese geostationary satellite that serves Australia requires a bandwidth of 260 kHz *not* 30 to 50 kHz. Yes, you might receive an image, but it will be pretty grotty.

I did an experiment using an orbiting satellite receiver with the 50 kHz filter to receive GMS and the result can been seen in **Figure 1**. The American GOES and European Meteorsat series geostationary weather satellites do use the same bandwidth as the orbiting satellites, but for some reason Japan, and probably China, have opted for the wider configuration. *(Sorry, Arthur, I should have picked that up at the editing stage. Ed.)*

Letters and pictures...

I had a letter this month from a reader who has an interesting problem. Kim, whilst living in Mackay, had been receiving good images from the NOAA and Meteor orbiting satellites. However, he has just moved to Clifton Beach, 20 km north of Cairns and now receives nothing.

Kim says that his failure is due to

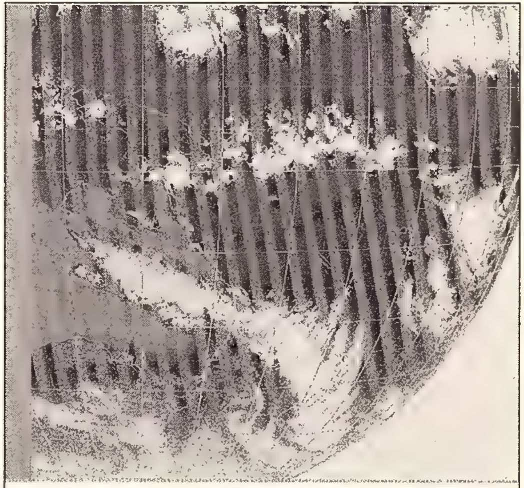


Figure 1

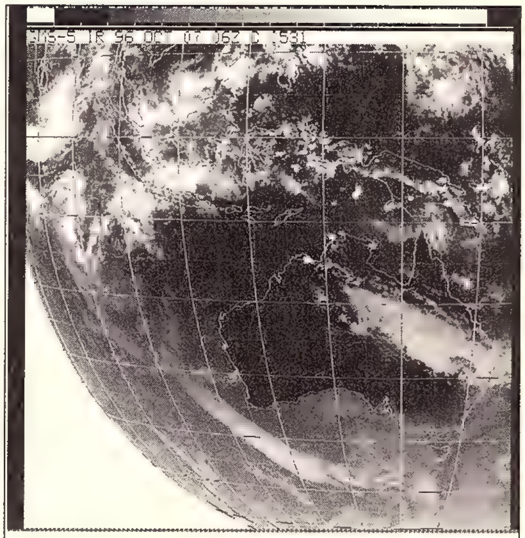


Figure 2

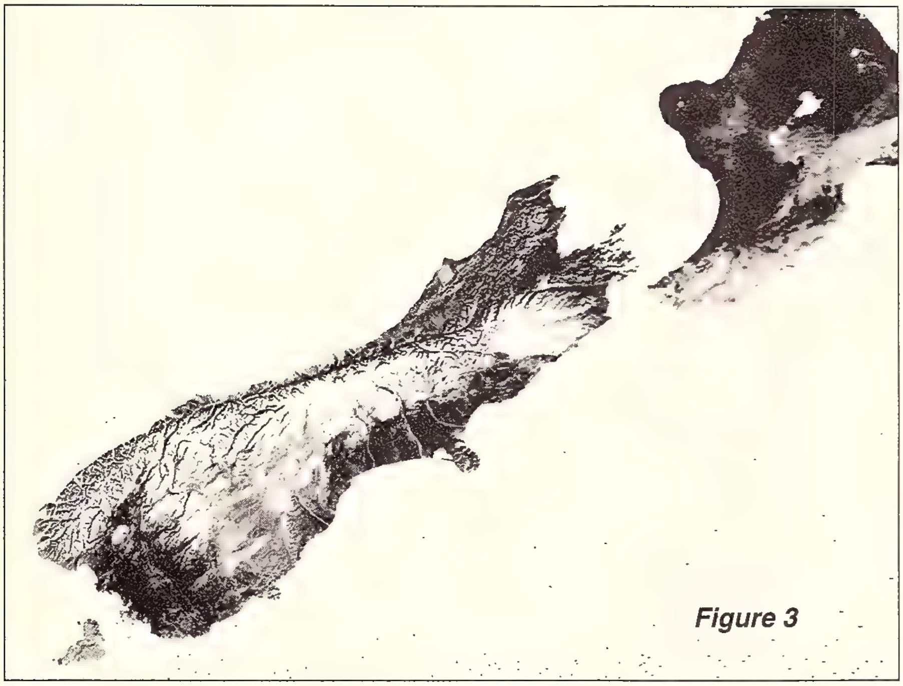


Figure 3

his receiver being blanked by transmissions from a nearby Channel 5A TV transmitter. I looked up the frequencies for 5A and found that the vision carrier was on 138.25 MHz and the primary sound carrier was on 143.75 MHz, no doubt providing a big front end overload to Kim's receiver.

I thought that 5A was now obsolete, but evidently that's not so. I don't know how far Kim is away from the transmitter, but I think he would need some very efficient filtering to get rid of or even to reduce the interference. If any reader could come up with a solution I am sure Kim would be very grateful. If you can help, please contact Kim Prime, PO Box 28, Clifton Beach, QLD 4879 or via Email: kamap@m131.aone.net.au.

Since I started receiving HRPT images from the NOAA images I have become increasingly interested in environmental land imaging which, though not as precise as Landsat or Spot earth imaging satellites, can give good results over a wider area. My thanks goes to Bill Kempees in Canberra who has been a source of information and help in enabling me to conduct vegetation indices etc from NOAA images.

Bill and I would like to hear from any HRPT users with a view to forming a users' group where imaging techniques etc can be shared. I have included a vegetation index image compiled by Bill of the South Island of New Zealand. In the original grey scale image supplied by Bill the vegetation was shown as light shades and the barren areas black. To make it easier to publish I have inverted the image so that black is vegetation and white is barren areas.

When receiving images from around the Eyre Peninsular I have noticed some almost geometric land formations (see **figure 4**) which I cannot identify from a topographical map. These angular areas look to be natural formations. If anyone can enlighten me I would be obliged.

The four images included this month are as follows:

Figure 1. Image received from GMS 5 using an orbiting satellite receiver with a bandwidth of 50 kHz.

Figure 2. Image received from GMS 5 using the correct receiver with a bandwidth of 260 kHz.

Figure 3. Image submitted by Bill Kempees showing vegetation index of the South Island of New Zealand. White indicates areas of low vegetation, black shows vegetation areas.

Figure 4. Image of Eyre Peninsula area of South Australia showing rectangular land forms. What are they?

Oh well, back to the olives. Cheers for now. See you again...

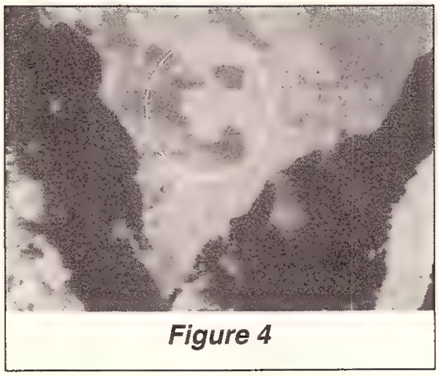


Figure 4

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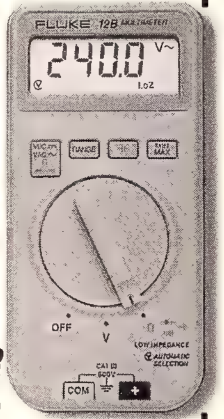


Baudwalking

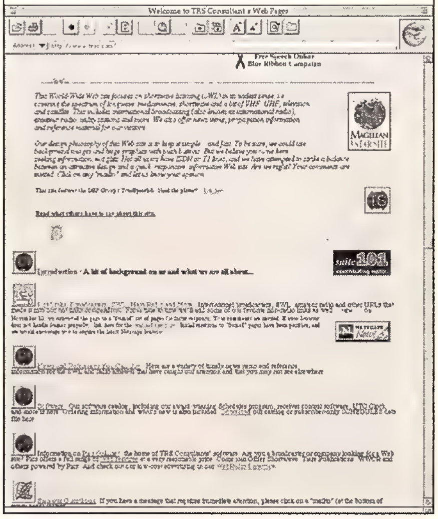
Summer's here, and there are places to go and things to do. Nevertheless, when you come in from the sun and grab a cool drink, fire up the Web browser and take a look at this month's research...

Names from the past...

Who is (*was*, actually) Charles Herrold? While doing some research on antique radios and old-time radio, we found a fascinating story of a person whose name we did not recognise. Mike Adams, on his page at **http://www.ksjs.org/adams/adams3a.shtml**, writes

"...The 1912 Charles Herrold Water-Cooled Broadcast Microphone: Starting about 1909, an inventor named Charles Herrold began to broadcast music and talk from his wireless college located in downtown San José, California. Because licensed radio broadcasting would not really happen for 11 more years, Herrold had to invent and construct the technology. With the telephone as a model, here is the chronology of the first microphone used in radio broadcasting." Mike has a good deal more information on the site, and it is well worth a read.

Tom's own pages have been completely revitalised of late, with a complete range of links to other fascinating sites, including many of the ones he describes here.
Dial up http://trs.com


Welcome to TRS Consultant s Web Pages
Free Speech Online
Blue Ribbon Campaign
MAGELLAN
suite 101
Introduction - A bit of background on us and what we are all about...

Digging further, we found a PBS station in San Diego, California, USA, that produced a television documentary on Herrold. The program fact sheet has a photo, and elaborates on Herrold's teaching at a San José college. Follow the links and you can download a file of the only known recording of Herrold to exist. KTEH's URL is **http://www.kteh.org/prod/docs/docherrold.html**.

Another name I did not recognise appeared in the compilation. The Web page is titled *The Farnsworth Chronicles*, and the material captivated us. One thinks of Morse, Marconi, Edison, Armstrong... but Philo T Farnsworth? According to this story, Farnsworth invented television.

Part of the introductory material elaborates: "Farnsworth was a 14 year old Mormon farm boy from Rigby, Idaho, with virtually no knowledge of electronics when he first sketched his idea for electronic video on a black board for his high-school science teacher in 1922. 15 years later, that teacher would re-create that sketch as part of his testimony in patent litigation between Farnsworth and the giant Radio Corporation of America. Farnsworth eventually won all of his extensive litigation with RCA, and became the first independent inventor *ever* awarded a royalty-paying patent license from RCA." Connect to **http://www.edge.net/noma/philo/** and enjoy.

Lou Genco has one of the older sets of pages on the Web dealing with old-time radio. Called "Original Old Time Radio WWW Pages" it is a potpourri of old time radio sources, FAQs, catalogues of radio programs and equipment catalogues, photographs and more. There's a really interesting RealAudio page too. It includes the classic Abbott and Costello's 'Who's on First' routine, which simply never gets stale. And, under References, there is a searchable database of more than 100,000 records to locate a program source (vendor's or collector's name code), source's tape ID, program name, series name and date of broadcast. Dial up **http://www.old-time.com** and enjoy.

Press Services

On our never-ending search for press services' Web sites, the three latest ones we found are:

- Kyodo News: http://www.kyodo.co.jp/
- Macedonian Press Agency: http://www.hri.org/MPA/
- Reuters: http://www.reuters.com/

Amateur Radio

We found an Australian Web site that lists e-mail and, where available, home Web pages for Australian amateurs. The site came to life in May 1996. Apparently it is in the growing stages as the number of listings are minimal, but it is a start. It is broken down by call areas VK1 through VK8. You can add your own listing if you wish. Check it out at **http://www.mpce.mq.edu.au/~guy/amateurs.html**.

Some fortunate Radio and Communications readers have signed up for the amateur radio Dayton Hamvention trip four months from now. The dates are May 16, 17 and 18, 1997. You and approximately 30,000 other attendees will crowd into and around the Hara Arena for the world's largest hamfest.

And now you can take a sneak peak at all that is and will be going on by logging onto the official Web site. Just about anything you need to know can be found at **http://www.hamvention.org/**. There is also a selection of photographs from the 1996 event. By the way, *trust* me — take rain gear...

Are you bored with the HF amateur bands? Do you have WAC, 5BDXCC, and some contest certificates hanging on the wall? In addition to IOTA to keep you busy, the USA's CQ Magazine sponsors a **USA-CA** award for working 500 USA counties. There are additional seals for working more counties in 500 increments, and a plaque awaits those who work them all. All 3,076, that is...

The county hunter net meets daily on 14,336 kHz. 7238 kHz is an alternate frequency. Now learn more about county hunting through the Web site at **http://www.delve.com/ch/**. Though this Web site is mostly devoted to the phone side of things, there is a link to information on the CW County Hunters Net as well.

If you check through the Awards page and listing of USA-CA holders, you'll find me at number 421 issued in 1983. It took me about three years to work them all. The 1,000th USA-CA will probably be issued around the first of the year. Believe it or not, some persons have worked all countries five times!

Columbia University has posted a list of amateur radio callbook servers around the world. Though more than half of the entries are for USA callsigns, there are sites for UK, Canadian and Italian look-ups.

And there is a link to get DXpedition QSL information via e-mail. Check it out at **http://www.cc.columbia.edu/~fuat/cuarc/callsign-servers.html**.

Clubs

David Onley (donley@vds.com.au) wrote a note to say that "the *SPUD* Web site (*South Pacific Union Of DXers Inc*) has moved to: **http://www.vds.com.au/~donley/spud.html**. I'm hoping this will be accessed a lot quicker." The old site was at http://audio. apana.org.au/~donley/spud. html.

Martin Howells, Secretary of *The Newcastle Scanner Group* writes to tell us of a scanner and shortwave hobby group in New South Wales. "We now have our web site active to tell people more about who we are and what we do. But that's not all! Our site has links to other sites of interest to scanner and shortwave listeners, links to various SW broadcasters, and lots of other info of interest to enthusiasts. Our URL is: **http://users. hunterlink.net.au/nsg**." Howell's e-mail address is nsg@hunterlink.net.au. More conventional means are by post to Newcastle Scanner Group, PO Box 728, Charlestown NSW 2290. The combined phone / fax number is (049) 65 7297.

Howell adds: "My own personal page is mainly aimed at providing non-Amateurs with information about Amateur Radio. **http://www2.hunterlink.net.au/~dhmjh/vk2tjo**.

"The *Brisbane Scanner Group* caters for scanner enthusiasts in the Brisbane Queensland area: **http://www.globec.com.au/~glenmack/bsg.htm** and the email is glenmack@globec.com.au."

And he concludes with a comment that *CREST NSW Inc* (Citizens Radio Emergency Service Teams) has a new Web page at **http://www2. hunterlink.net.au/crest**.

Software

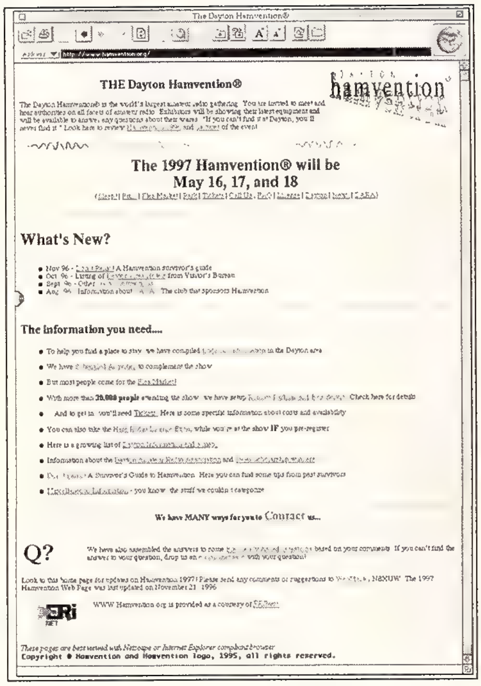
Joe Ahlgren's shareware *GeoClock* program is probably the most popular of the sunrise-sunset 'greyline' mapping programs. Within the last year or two a Windows version has become available. Now there is a Web site from which you can download the shareware versions. It is **http://www.clark.net/pub/ bblake/geoclock/**.

The Web site does not support downloads of the additional maps available to registered users, and the logistics probably preclude this happening. It might be best if you just order the set of disks by post as the two-line BBS is in Virginia, USA. Version 7.3 was released last October.

Yet another propagation program is on the scene. Written by Simon Collings, G4SGI, "MUFsight is a Windows program for plotting HF propagation data on world maps in either spherical or azimuth projections. Uses the respected MINIMUF algorithm."

A demo of the program is available. Dial up **http://www.ibmpcug.co.uk/~g4sgi/Mufsight/Mufsight.htm** and have a look. If you look around his site you'll find a host of other software — mostly receiver control for more than a half-dozen receivers — to look at. Demo versions are available for virtually all of the software.

Marc Robinson of Philip Collins & Associates, Sydney, penned a note describing the *Radphone 2000*, a product manufactured by PCA. "The Radphone 2000 Series Remote Control Systems offers worldwide control of radio communications receivers and transceivers from the keypad of your phone.



The Dayton Hamvention®

http://www.hamvention.org/

THE Dayton Hamvention®

The Dayton Hamvention® is the world's largest amateur radio gathering. You are invited to meet and hear authorities on all facets of amateur radio. Exhibitors will be showing their latest equipment and will be available to answer any questions about their wares. "If you can't find it at Dayton, you'll never find it." Look here to review [illegible] and [illegible] of the event.

The 1997 Hamvention® will be
May 16, 17, and 18

What's New?

- Nov 96 - [illegible] A Hamvention survivor's guide
- Oct 96 - Listing of [illegible] from Visitor's Bureau
- Sept 96 - Other [illegible]
- Aug 96 - Information about [illegible] The club that sponsors Hamvention

The information you need....

- To help you find a place to stay, we have compiled [illegible] in the Dayton area
- We have [illegible] to complement the show
- But most people come for the Flea Market!
- With more than **20,000 people** attending the show, we have setup [illegible]. Check here for details
- And to get in, you'll need Tickets. Here is some specific information about costs and availability
- You can also take the [illegible] Exam while you're at the show IF you pre-register
- Here is a growing list of [illegible].
- Information about the [illegible] and [illegible]
- [illegible] A Survivor's Guide to Hamvention. Here you can find some tips from past survivors
- Miscellaneous Information - you know, the stuff we couldn't categorize

We have MANY ways for you to Contact us...

Q? We have also assembled the answers to some [illegible] based on your comments. If you can't find the answer to your question, drop us an [illegible] with your question!

Look to this home page for updates on Hamvention 1997! Please send any comments or suggestions to [illegible], N8NUW. The 1997 Hamvention Web Page was last updated on November 21, 1996

WWW.Hamvention.org is provided as a courtesy of [illegible]

These pages are best viewed with Netscape or Internet Explorer compliant browser
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"Remote control a wide selection of communications equipment from AOR, Barrett, Codan, Drake, Icom, JRC, Kenwood, Lowe, Rohde & Schwarz, Yaesu and others with the appropriate Radphone 2000 model. Directly monitor your shortwave transmissions in real time using receivers placed within your target areas. Join the ranks of International Shortwave Broadcasters like the BBC, Deutsche Welle, Radio Austria, Radio France, Radio Netherlands, VOA and others who use the Radphone 2000DX."

Some years ago Jonathan Marks of Holland's *Radio Nederland* gave me access to their receivers around the world. It is quite something to press some keys on a touch-tone telephone and tune and listen to their several Japan Radio Company NRD-535D receivers. There is a host of other professional equipment — satellite telephones and communications and more — described on the Web site at **http://people.enternet.com.au/~pca/**. Get ready to get jealous...

Odds 'n Ends

Last month we mentioned that Risto Kotalampi (rko@iki.fi) had created **Radio-Internet@kotanet.fi**, a new discussion and information list for all SW/MW/FM/ute listeners. Now Risto writes "Someone wanted a pirate list. I have created **pirate@kotanet.fi** emailing list for that purpose. You can subscribe it by sending "subscribe pirate" in subject to **listserv@kotanet.fi**.

Nils Jakobsson of

...☞

Baudwalking
(continued)

Sweden has been chasing DX stations since 1969, and specialises in hunting Latin American stations. He has compiled a document dealing with collecting verifications that can be downloaded from his Web site.

On his page of links to other Web sites, Jakobsson explains why the site serves his needs. One interesting link was to an online dictionary and translator. We have not tried it out, but you can. Jokobsson's home page is new. We were the 45th visitor last September. Dial into **http://www.algonet.se/~mwm/ eedxing.htm** and have a look.

What time is it? Well, mate, that depends on where you are. Jon Clarke has assembled a page of 22 clocks covering most of Asia, with London and New York thrown in for good measure. Dial up **http://air.com.hk/~jonc/time.html** and let it load.

Clarke's other pages are not radio-related, but are interesting for me as I have not travelled to Asia or the South Pacific. There are a host of aerial photos taken around New Zealand, Hong Kong and elsewhere. Back up to his home page and take a look.

Are you a **broadcast professional**? We found a large compilation of links to Web pages of firms offering equipment, services, programming, and other information. Though some of the links are clearly oriented to customers in the USA, the majority should be of interest to all broadcasters. Dial up **http://www.broadcast.net/**.

Beatles... *all* the Beatles, *all* the time

The Fab Four set the music world on its ear in the 1960s. Now an FM station, **KCTY**, in Dallas-Fort Worth, Texas, USA, plays the Beatles, nothing but the Beatles. The station went on the air August 10, 1996.

If you came of age in the 1960s and were a fan of the mop tops, grab the new version 2 of Streamworks (**http://www.streamworks.com**), turn on and tune in. The FM105 Web page is **http://www.planetcasters.com/**. Unplug the phone and crank up the amp — it sounds great!

The station operation is interesting too. Tony Rodriguez, owner of KTCY, operates the fully-automated station. The music sits on a server with two 9 GB hard drives. From his home, Rodriguez uploads the playlist to the server each night.

If rock and roll was your forte and you are going to the Dayton Hamvention, it is just a short hop to Cleveland and the Rock and Roll Museum Hall of Fame on the lakefront. My wife and I were in town for an Indy car race last August, and we spent more than six hours prowling through an absolutely marvellous set of exhibits. The first floor of exhibits dealt with the origins and early years, and that alone was worth the price of admission.

Take a look at **http://www.rock-hall.com/** for a peek at the goodies. If you go, take some extra money and take the time to browse through the museum shop. We found some extraordinary CD collections of artists not seen elsewhere.

Share your favourite Web, FTP or Gopher radio or communications site with others. Drop me a note at **trs@trsc.com**, or click on any "mailto:" link at **http://www.trsc.com**.

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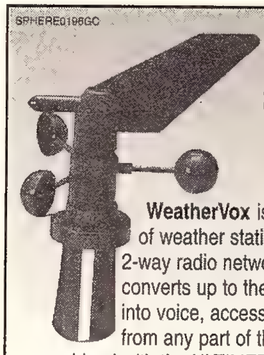

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Photo: GQ Patrol/Maverick

Vacuum moulded finish to match crash pad. Easy installation and no need to drill any holes.

Photo: 70 Series Landcruiser Troopcarrier-tray back-MWB-SWB-Bundera

Photo shows longest pod. Two shorter versions also available for the 70 Series.

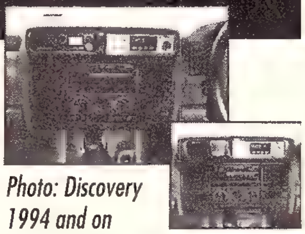

Photo: Discovery 1994 and on

Easy installation - if removed, no visible signs that pod has been fitted.

Similar dashboard pods are available for: Discovery to 1993 • Feroza • F100-F250-F350 1969-79 • Hi-Lux 1984-1988 • Navara • Pathfinder • Patrol MK-MQ • Range Rover • Rocky • Vitara • and some trucks

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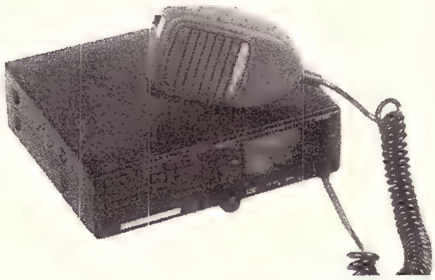

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1996 AUSTRALIAN 11M DX CLUB AGM NEWS

Compiled by Jack Haden, VK2GJH

Tweed Radio convention 1996

It may well be all over for another two years, but the memories will still be fresh in people's mind for some time to come, as the 1997 convention was an outstanding success reports Bryan, the 43-TR-01 from Ipswich. Old mates caught up with each other, faces were matched with voices from the radio and many new friendships were struck up at the Tweed Radio 1996 convention at Murwillumbah over the weekend October 19 and 20, 1996.

Attendance was well up on expected, with over 50 arriving on Saturday and building up to over 150 on the Sunday with members from all around Australia making the pilgrimage. It was a pity that more overseas members couldn't make it as the weather was perfect although a late storm Saturday afternoon sent some scurrying for cover!

As usual the raffles were well patronised with a Megatron 27MHz base antenna being won by Dale, the 43-TR-452 from Brisbane as first prize. The second prize, a 27MHz gutter mount antenna system and coax was won by Aubrey, the 43-TR-011 from Bribie Island with both prizes donated by Kyle Communication in Brisbane. Finally, third prize was a multi-tester and was won by Fred, the 43-TR-470 from NSW with the prize being kindly donated by Adrian, the 43-TR-80.

The Memorial Shield, dedicated in memory of Laurie, 43-TR-001, was presented to 43-TR-474 Steve from Ipswich in QLD. Merit awards were also presented to the deserving and the Tweed Radio Bucket Mouth of the Year was also presented, but who won it? Tweed has 450 Australian members and 3,000 plus overseas.

Amateur radio was there too. After all, the Tweed Radio convention covers all aspects of the communications hobby and not just CB radio in general, with a station set up by VK2s KSG, TAX, KST and GIM which proved very popular with visitors. Demonstrations of VHF Packet Radio, HF, Weather FAX and two metre operations were given by the group and drew quite a crowd. Bryan reports that the flea market received some lively activity with many bargains being snapped up very quickly.

After the awards and presentations were handed out it was announced that the 1998 convention would be conducted in Ipswich, Queensland at a date and venue to be decided upon soon. Bryan, the 43-TR-01 would like to extend his thanks and appreciation all who attended, and of course to those who helped make the event possible especially those who helped on the lead up to and on the weekend of the event and thus made it so successful.

You can contact Tweed Radio via PO Box 977, Ipswich, QLD 4305 for any membership inquiries.

Alfa Tango 1996 AGM news...

Although the attendance at the 1996 AGM was recorded at 33 actual members, family and friends boosted attendance to around 60 or so. A good time was had by all with Bob, 43-AT-026 as MC ensuring that the agenda run smoothly. Members had a hearty belly laugh after Bob played the 'Alfa Tango Theme Song' — apparently it doesn't go down too well with the gang in Italy, though.

Many missed the wit and humour from past MC, Dave the 43-AT-109. An appropriate acknowledgment from one member concerning Dave summed it all up: "Dave, 43-AT-109, we all loved you and now we've lost you, so good luck mate as you explore those amateur bands!".

The Australian Alfa Tango contest winner was again Alan, the 43-AT-453 from Darwin with the multi-op award going to 43-AT-265 Peter and 43-AT-217 Andrew. Members from all states except Tasmania and Western Australia fronted up for the shindig with 41-AT-109 Les from New Zealand and 172-AT-101 Philippe in from New Caledonia being the only overseas guests present.

Some were not too fussed about the food on the big night, however this shortfall was soon made up as many discovered the delights of the neighbouring night club reported to be adequately stocked with YLs, handy for those younger members and the young at heart who wished to party on until dawn!

Nick, the 43-AT-012 apologised for the absence of the Australian edition of *11 News* during 1996 due to the poor propagation conditions and the subsequent absence of news. Some members expressed concern that they still hadn't received their 1996 callbooks and Nick attributed this to problems in Italy and said AT Australia was not to blame. Other members expressed concern that, although financial, their name and callsign was missing from the current callbook; again Italy was put at fault.

The majority of those present approved of the Queensland venue, so much in fact that the 1997 AGM will be held at the very same place but later over the second week of November rather than the first week as with past AGMs. Although the Sierra Alfa bus trip from Melbourne to the venue failed to operate this year (due to the lack of numbers) and thus boost attendance levels a good time was had by all.

Sierra Alfa 1996 meeting...

I spoke with Pino the 43-SA-01, the director for Oceania, the other day on the telephone to check up on rumours that Sierra Alfa had folded up and was no longer operating. Pino assures me that despite the 1996 AGM in Melbourne scheduled for early November being cancelled, the club was still alive and well. Another damper on the event was that Antonio, I-SA-001 couldn't make it from Italy due to family problems.

Due to insufficient numbers wishing to participate in both the AGM and the bus to the AT shindig at the Gold Coast, there was no option but to terminate both activities. Only seven or so members put their names down for the bus trip where at least 35 are required to make the journey viable and few expressed interest in attending the AGM.

Pino is waiting for advice from Italy regarding tickets sold in the club raffle with a first prize being a round trip air ticket to Italy. Only 100 to 120 tickets have been sold to date and at least 1,000 need to be sold for the raffle to break even. If Italy decides to scrap the raffle then money will be refunded to all who have purchased tickets.

Current Sierra Alfa members will not be required to renew their 1997 membership. It's been decided that those who are currently financial will be given 1997 membership free and those in the 1996 callbook will automatically appear in the 1997 edition.

It's hoped that members will become interested in their club once again as propagation slowly picks up and Pino wishes all a very happy Christmas and a prosperous 1997.

Information regarding the club can still be directed to Pino via PO Box 466, Brunswick, VIC 3056.

FAMPARC celebrates 21 years...

Melbourne's Frankston and Mornington Peninsula Amateur Radio Club will be celebrating its 21st birthday next month. Foundation members are especially invited to join in. Call Peter Willmott, VK3TQ on (03) 9773 3807 at home or on 019 18 0164 during business hours for more info.

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11m DX International

By Jack Haden, VK2GJH...
PO Box 299, Ryde, NSW 2112

It's that time of the year again when one passes the annual Seasons Greetings to one and all. In my case, that's especially aimed at those who took time throughout the past year to keep me informed of happenings on the 11 metre band — as always your efforts were very much appreciated.

Propagation has started to pick up again, and signals from our own neighbourhood, the Asia/Pacific region, have increased greatly in signal strength recently. Putting aside the kilowatt-plus stations that hail from Japan and Taiwan, good five nine plus signals have been received from Pacific island nations running elementary equipment, and that's a good sign that things are on the way up.

The first Europeans started to filter through in late October to the northern states of Australia with conditions gradually on the improve since then. Another good sign of things looking up is sporadic bursts of DX on the six metre amateur radio band (50MHz) proving the MUF (Maximum Useable Frequency) is indeed on the rise.

By the time you read this, the enhanced conditions should have filtered through to the southern states of Australia, as I heard quite a bit of European activity in mid to late November here in Sydney. Guess it's time to blow the dust off the gear, check the SWR on the antennae and start taking more notice of the IPS propagation charts at the rear of this publication!

Honour amongst thieves?

Mateship used to be a common bonding among radio DXers whether amateur or CB operators, but I was not too surprised to hear some cut-throat frenzied activity on 11 metres the other weekend. It was a case of every man for himself and stuff everyone else on the radio at the time!

Starved of decent DX for many months now, some DXers have started a bit of one-upmanship on each other and have resorted to near Leo Wanker-style tactics in order to beat someone else to the DX contact. Like vultures fighting over a rotting carcass, they double mic and tailgate each other on the DX call frequency — radios running full flog, they try to outdo each other for a piece of the action.

Funny thing was, the station being pounced on was a humble 79 prefix in the Philippines! Gee, I'd hate to see what would have happened if, say, 320 prefix Banaba Island came on? Three stations were involved in this melee and I know that all three have the Philippines already confirmed — two of them many times over — so why the semi-orgasmic gusto?

Only 12 or so months back, the same three fellows used to work in with each other hunting DX, even to the extent of running telephone tip-offs etc. Now they are virtually cutting each others' throats to work anything and everything, no matter how common. My, how things change! With Europe starting to come through again it will be on for young and old once again.

Victor Hotel Australia...

It appears quite a few of the older DXers about are getting a little peeved with the European-based international DX groups and some have opted to branch out and become more independent, hence the formation of the **Victor Hotel Australia**n 11 metre DX Group from Western Australia.

Cutting all that mumbo-jumbo and red tape that surround the European clubs, the Victor Hotel mob has established a simple set of rules to follow, most of it just plain common sense really.

There's no membership fees to worry about, you can design your own QSL card, you can decide for yourself if you even wish to QSL or not! Of course, if someone sends a SAE and some funds then you are obliged to reply, send nothing, give 'em nothing!

Other club initiatives are CW practice sessions, a weekly Victor Hotel net, DXpeditions, Newsletter, callbook and a QSL bureau. Breaking away from the Alfa Tango-founded numerical country prefixes, the gang at Victor Hotel have given 11 metre DXers a more amateur radio like callsign system.

It more or less follows the state system — as do the 'VK' amateur radio callsigns — so in essence VH2AA is a NSW operator, VH7AA is a Tasmanian op etc, although Norfolk Island and some others do not follow the amateur prefixes the main states of Australia do.

Again, it's refreshing to see another Australian 11 metre band DX group start up and set themselves an Australian agenda rather than one copied off the Europeans. You can reach Victor Hotel for a complimentary information brochure by writing to 2 Marloo Road, Greenmount, WA 6056.

Mongolian QSL saga continues...

I spoke with John, VK2DEJ the other day and he informs me that a second letter sent to Ulan Bator in Mongolia actually arrived there... more or less, and probably in John's case the latter.

You see, John received a letter back from the Mongolian amateur radio society acknowledging receipt of an 'empty' envelope they received from him! That's right, *empty* — not a thing inside, which brings us to ask what in fact happened to the contents along the way?

The Mongolians sent the empty envelope back with their letter and I took the opportunity to inspect it and could find no trace of it being deliberately 'forced' open. The sticky tape John had put on the rear was still there, although now it was not sticking any more and the envelope's own adhesive failed to adhere too thus the rear of the envelope could not longer be stuck down.

Was it the old steaming kettle trick? Putting that aside, the real questions remain about who had done what and where along the way need to be solved. Was it at the Sydney end where John had 'problems' before, or this time at the Mongolian end? If only that envelope could talk!

DXpedition news, rumours and gossip...

The **Czech Republic** should be still active as you read this by way of 329-SG/DX and will wind up operations at the end of December. QSL via PO Box 10, Athens 15303, Greece. A greenstamp is required.

Latvia will close down come December 31 signing as 310-AG/0 so there are still a few days left to hunt this one down. QSL via PO Box 12, Welden 86463, Germany. One IRC is requested.

The **Balearic Islands** is usually an easy one to bag when good southern European propagation is about, so have a look for 49-VE/0/DX which is on air until December 31. QSL with a greenstamp via PO Box 147, Palma 07080, Balearic Islands.

There have been sporadic reports of Egypt being active by way of 117-RH/0 with the said station to remain on air until 2000 contacts are etched into the logs. QSL via PO Box 45004, Athens 13510, Greece. A greenstamp is a must.

Ascension Island along with **St Helena Island** could be activated any day now as 148-AT/? and 63-AT/? respectively. This one has been on the wings all year now with late 1996 or early 1997 as possible activation times. QSL cards with SAE and greenstamp will go via PO Box 831404, Frankfurt 65913, Germany.

Botswana (105), **Lesotho** (142) **Mozambique** (204), **Swaziland** (191), **Zambia** (78) and **Zimbabwe** (85) were scheduled for a late 1996 activation by the Delta Tango group from the UK. All stations will sign with the DT/000 suffix. QSL via PO Box 7219, Albemarie 1405, South Africa. An American dollar and SAE is expected.

Guinea should be active during December by way of 14-R-005/182, reports 14-R-293 in France, and supplies a QSL route as being via PO Box 161, Montreuil Cedex 93103, France. A greenstamp is essential.

Barbados and **Bermuda** are to be activated as 122-BIG/0 and 123-BIG/0 respectively during December 1996 through January 1997. QSL via PO Box 1, Torretta-PA 90040, Italy. A greenstamp and SAE is requested.

European report...

It's been some time since this department has appeared in the column, and — in case you have stored all your gear away — well, Europe has been coming through since late October, so quite a few DXers have a head start on you! The usual side-show alley is there from the more populous radio districts in western Europe as well as semi-rare DX from smaller European districts such as Malta, Luxembourg and San Marino amongst others.

Slovenia came through quite well the other night on channel 34 LSB by way of 327-TR-101 operated by Slavko. Conditions were good with Slavko being a good five by seven at the home of Bryan, 43-TR-01 in Queensland.

Malta was logged by Graeme in Western Australia by way of 93-RC-011 with a good five by seven report and Graeme says the contact held for near 35 minutes... not bad going at all around the 0800z mark.

Luxembourg is one some of us still need and at 0845z Bill, the 43-KR-03 in Queensland logged the 54-SS-103 operated by Michel. At 0912z Michel came through with a glowing five by eight peaking nine report.

Gibraltar was a fair catch for Nev the UNIT-425 in far north Queensland at 0844z by way of 55-RP-102 with Alain at the mic. At the time Alain was a reasonable five by five but had peaked to an eight some 20 minutes later and when heard working into Albury/Wodonga.

Ukraine Republic has been coming through on odd occasions by way of 315-SL-400 operated by Alex and the 315-RR-19 operated by Lenko and were worked by 43-SA-191 Bill in NSW and 43-AZ-101 Roy in western Victoria around the 0645z mark.

Arabia and the Gulf States...

Good signals are filtering through from this region with many of the old regulars still on the band plus a few new callsigns to add spice to the hunt. Best time to look for this region is around the 0400z mark onwards.

Qatar is back with us again by way of 115-AC-103 operated by Hamad, and at 0745z he was worked by Graeme near Perth in WA at a good five by six plus report. Also logged around this time by the gang in Queensland was the 115-GG-32, operated by Jamal, with a five by eight report.

Kuwait always comes through well when conditions are ripe with a variety of stations active, some on the 40-channel block coming through quite well. The 102-NN-002 with Khaled at the mic was a five by seven at 0633z observed by a contributor in northern NSW.

Lebanon has been noted by many across Australia with 112-ALR-9, name unknown, coming through the European rabble at 0855z with a workable five by three report. A Lebanese Alfa Tango station was also logged working New Caledonia in French at 0912z and was five by six at the time.

Israel is also about in relative abundance with numerous stations being heard. I wonder if our old favourite, Tolly, who operates as Delta Station, will be back with us this DX season?

Africa and Indian Ocean news...

Nothing much to report from this region as we go to press except that some signals have been logged in Western Australia and North Queensland from **Reunion Island**, **Mayotte Island**, **Maldives**, **Mauritius** and **Sri Lanka**, so keep monitoring.

Botswana has been logged by many in Europe recently with the 105-BR/SES operation still on air celebrating 30 years of independence and contacts have a fair way to go before they reach the 1500 target. So there's still a chance for us to have a crack at it. The QSL route was in the November issue.

Tromelin Island is rumoured to be on air by way of a French station there until late December, although no one with credibility in the DX circle has worked the station. It may be just that — a rumour from Europe!

Oceania and Asia...

The DX has really picked up in the Pacific with some good strong signals being reported from many island nations coming through across Australia and New Zealand. Bryan the 43-TR-01 has Hawaii, Western Kiribati, Eastern Kiribati, Rotuma Island, Federated States of Micronesia, Japan and Asiatic Russia logged, so things are really on the move.

Other DXers have written to tell of decent openings into the USA with the band opening further and further towards the east coast. California, Alabama, Arizona, Alaska, Florida, Washington, Nevada, Texas and Utah have already been logged here in Sydney so those chasing a Worked All States award had better be on the alert.

Japan normally has a good QSL reputation when it comes to radio DXing, but not so if you deal with 25-CW operated by Yossi who is also known as 25-SD-136. This chap has been sent cards by many Australian DXers but when challenged about the lack of reply quickly loses his English-speaking skills! You may like to try 25-TR-140 or 25-SD-112 both reported active from Japan and recently logged by Derrick the 43-N-983 in NSW.

Rotuma Island is still reported as active by way of Pita who has a variety of callsigns under his belt from different radio groups. However, he appears to be most active with his 325-TR-01 callsign and can be found on the 40-channel block.

The **Marshall Islands** is a regular from Micronesia on 11 metres. Bill the 43-SA-191 in NSW reports a good five by seven report from Morris (AT callbook, says Boris) the 132-AT-105 from Ebeye on **Kwajalein Atoll** at 0400z. Also heard was 132-KX-09, UNIT-808 and 132-SO-06 all from Majuro, the capital of the Marshall Islands.

Guam Island was logged by way of 62-OX-41 with Llew at the mic, who was a good five by five at the residence of Bill 43-SA-191 around the 0630z mark.

Asiatic Russia has been logged by many in Australia with Steve the 43-RX-02 in Victoria working 302-US-008 at 0845z and Bill the 43-SA-191 in NSW working both 302-RA-230 operated by Toli and 302-CA-423 with Vlad as the operator at 0610 and 0625z respectively with workable signals.

Taiwan has quite a number of active stations on 11 metres, and just the other day I logged 155-TR-122, name unknown, working a station in Victoria. Derrick, the 43-N-983, has also reported scratching this one into the logs too so he's very active at present.

Nauru came through as a surprise on channel 32 USB the other day by way of an American signing as KR-1016 with Howard at the mic. Operating from the Od-N-Aiwo hotel in Aiwo district using just a gutter grip and a Cobra and 25 watts output, quite a few contacts in Sydney and Wollongong were worked. Howard was in transit on Nauru waiting for a flight to Pohnpei in 130 prefix.

Tonga has closed down by way of a YL operation signing as 96-YL/000 operated by Clemence. Reports from Europe say she worked only 10 European contacts, although many other stations were worked in Central/South America and Asia. Clemence hopes to activate Vatican City and Pakistan in the near future.

It was not made known as to how many Australian, if any, contacts were established during her stay in Tonga.

Plenty of news for everyone this time around, although nothing from Latin America for this issue but things should have picked up in that direction as well by now. News and views may be sent direct to me, but for a personal reply a stamped self addressed envelope is a must!

73 and Good DXing de Jack VK2GJH

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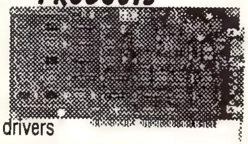

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Hey, it's Christmas! What a wonderful time of year… and what a wonderful opportunity to grab a really great read! We've looked around for some of the interesting things to suit most radio enthusiasts' budgets — and here they are.

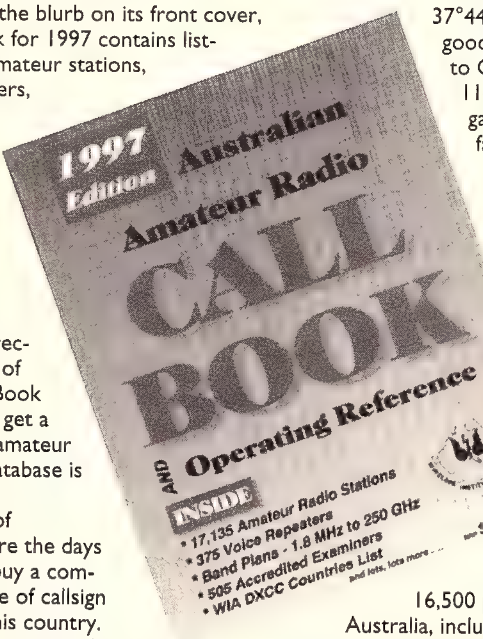
This month we take a quick look at the **1997 Australian Call Book**, **Dick Smith's Australian GPS Location Guide**, the **1997 ARRL Handbook**, **The Really Easy Guide to the Internet for Australia and New Zealand**, and **Orbit: NASA Astronauts Photograph the Earth**.

The more canny ones amongst you might like to put a very large, bold black circle around one or more of these items and leave the magazine open at this page in a prominent place. Who knows what Santa might see…? Let's get started…

The 1997 Australian Amateur Radio Call Book and Operating Reference

According to the blurb on its front cover, the VK Call Book for 1997 contains listings for 17,135 amateur stations, 375 voice repeaters, updated band plans, more than 500 accredited examiners, the latest DXCC Countries List, and a whole lot more.

Listed with a recommended price of $14.95, the Call Book is the *only* way to get a list of Australian amateur stations, as the database is Copyright to the Commonwealth of Australia. Gone are the days when you could buy a computerised database of callsign information for this country.



The Call Book is more than just a list of callsigns, however. The first 50 pages are devoted to data and lists of other kinds.

The book starts out with information on how to become a licensed amateur radio operator — dry stuff like the rules and regulations, then a little blurb about what amateur radio is, which turns into an advert for the WIA. And why not? The WIA publishes the book on behalf of the government.

Next up is a list of accredited examiners, then we see the local band plans, a list of recommendations about where one should use which mode. Then comes the lists of beacons, voice repeaters and packet radio BBS stations, distance records and TV station frequencies.

Other than the all-important callsign information, the reference book wraps up with information about awards, WICEN, DXCC lists and callsign allocations, contests and a list of affiliated radio clubs.

The callsign data occupies almost 100 pages and, while small, the listings are clear and reasonably easy to read.

It's no literary masterpiece, but a reasonably up-to-date Call Book is a must for every amateur shack. The WIA provided the review copy.

Dick Smith's Australian GPS Location Guide

A what? Yes, it's a book stuffed full of latitudes and longitudes for people who can read maps, or who have a GPS receiver.

Dick Smith (the man, not the company) reasoned that having a GPS receiver is only half the job. You can usually find out where you are with one of these gadgets, but what if you don't know the geographic coordinates of the spot you're trying to get to?

No problem. Just grab the book and look up your point of interest. My GPS receiver reckons my place is at 37°45'05"S, 145°15'47"E. The book says 37°44S, 145°16E, so it's pretty good there. If I wanted to get to Carney, WA (28°34S, 114°46E), though, the GPS gadget couldn't tell me how far I'd need to travel, nor in which direction I'd need to go, unless I could give it the coordinates at the other end.

That's where this book comes in. Dick suggests you keep it in the glovebox and use it to calculate travelling distances and times.

According to its cover, the book contains some 16,500 place locations within Australia, including all airports, cities and towns, as well as interesting and famous places. In remote areas you'll also find listings for things like Mellons Creek Corner, Tyarcumbuggerema (no, I am *not* kidding), or even the Middle Creek Paddock. And just watch out for the next edition — he's going to list all the McDonald's stores!!

Published by Dick Smith Adventure, the book has a RRP of $14.50 is distributed through Tower Books, and is available from Dick Smith and Australian Geographic stores, most book stores or direct from Dick Smith Adventure, PO Box 418, Terrey Hills, NSW 2084 (or fax your Visa number to (02) 9486 3482, and add $2 postage).

As Dick says, it's no literary masterpiece… but it certainly is a clever idea. And thanks for the autographed review copy, Dick!

The ARRL Handbook for Radio Amateurs, 1997 ed

How can you possibly discuss this amazing annual tome in half a dozen paragraphs or so? Following a complete rewrite in 1995, the ARRL Handbook has been freshened and revised for 1997, with an all-new Windows interface for the supplied PC-format floppy disk of associated executable programs.

This year's edition is the Handbook's 74th — and a more influential and respected amateur publication would be very hard to find. Basically, it instructs by covering the theory of electronics as it applies to hobby radio, then branches out into a lot of construction projects, and discusses the various aspects of modern amateur radio.

In introducing the book, its editor, Paul Danzer N1II, said that, following 1995's complete rewrite — badly needed to reflect the recent manifold changes in the hobby — the 1996 book "…included more projects and added a list of all projects to the index…".

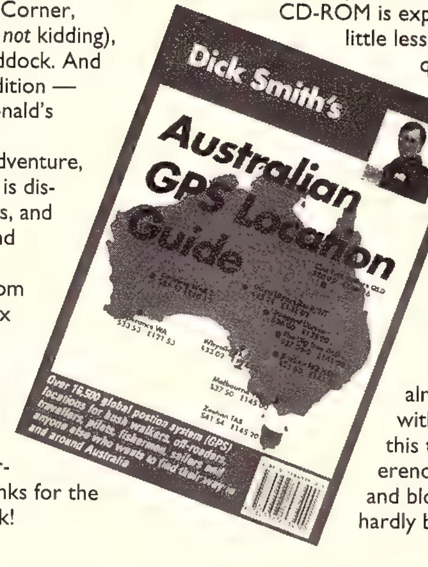
"This year we continued the emphasis of additional practical examples of new technology by replacing a number of projects with others. In addition, we worked toward a new goal — to make the book more user-friendly. Chapters begin with a mini table of contents, so you don't have to look through the entire chapter…"

It would be quite impossible to list all of the topics covered in the 1997 Handbook. The index alone runs to 22 close-typed pages! Rest assured that everything you need from a book of this type is there. *Everything.*

The 1997 ARRL Handbook should be available in stores soon if it isn't already. Our review copy was supplied by Dick Smith Electronics, where it will retail for $54.95. Ask for catalogue number B-2233

As a Postscript, we hope to be able to present a review of the 1997 ARRL Handbook on CD-ROM next month. All of the material contained in the printed version will be contained on the CD-ROM version, which will have search engines to give the purchaser the best hope of finding the particular resource material sought.

Although a price has yet to be set, the CD-ROM is expected to retail for a little less than the large, quarto-sized printed book, which has well in excess of 1000 pages.


Dick Smith's
Australian GPS Location Guide
Over 16,500 global position system (GPS) locations for bush walkers, off-roaders, travellers, pilots, fishermen, sailors and anyone else who wants to find their way in and around Australia

The Really Easy Guide to the Internet for Australia and New Zealand

You would almost expect a book with as long a title as this to be a medical reference work full of guts and blood, but that could hardly be said of this

A little Christmas reading

By Chris Edmondson, VK3CE

appealing all-new guide to the Internet.

Author Alan Ford has come up with a 278-page book which walks you through what sort of things you can find on the Internet, and how to find what you want there. More to the point, he explains the Internet in a sensible, easily-understood way, without the need for the reader to be a computer junkie or techno-nerd.

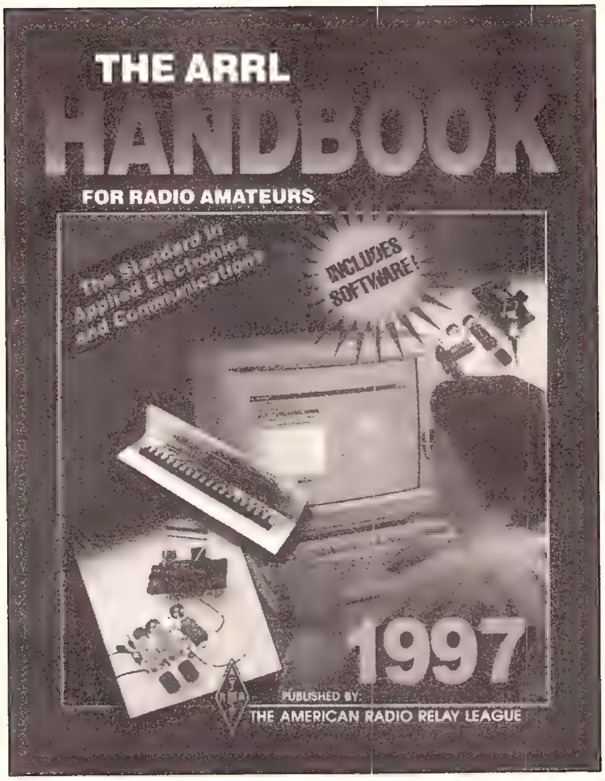
Aided by hundreds of screen grabs (which must have taken ages to collect), the author discusses how you can use the Internet to your best advantage.

The broad subject headings are:

What is it all about?
What can the Internet be used for?
A short history of the Internet
Making the connection
The World Wide Web : a world of wonder
Organising and searching for WWW resources
E-mail
Mailing lists
Newsgroups and conferences
Internet Relay Char (IRC)
Some traditional Internet tools, and their successors
Where are we now, and where are we going?
Telecommunications and the world's network

Several appendices and glossaries complete the work, with the most useful of these being a selection of service providers around the country and a list of country codes.

The Really Easy Guide was first published and released at the end of November 1996 by Hodder and Stoughton, so it's bang up to date, which is absolutely vital when dealing with the Internet! A good read, and good value at $29.95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Orbit: NASA Astronauts Photograph the Earth

Astronaut Jay Apt, N5QWL, has co-written an incredible book on photographs of the Earth taken from space. "Orbit: NASA Astronauts Photograph the Earth", is co-written with Michael Helfert and Justin Wilkinson, two Earth observation scientists at the Johnson Space Center.

What's especially impressive is that this book was written during the team's personal time, evenings and weekends — while Jay was in training for the STS-79 mission.

Incredible quality photos, with an innovative computer digitising method to retain the original image quality. Most of the time the public only gets to see third or fourth generation prints, and the digitising technique, plus high quality printing on coated paper does make a noticeable difference.

Okay, here's where amateur radio and SAREX come in. Jay wrote the introduction to each chapter. For Australia here's some excerpts:

"Communicating by an amateur radio has been part of the group of experiments assigned to each of my Shuttle missions. I've used it to talk to the very active radio amateurs around the Pacific Rim. I recall many conversations at night with hams in Australia and New Zealand who had gotten up in the wee hours just to talk to us as we flew overhead.

"I've been surprised by a call from a ham from Hilo, Hawaii, using a tiny radio in his car. I have seen the lights of the Palmer Research Station at the tip of Antarctica, and called the scientists there on our ham set. All of these conversations make me feel more connected to the people and the lands we are flying over.

"The Australian people have been fantastic supporters of the exploration of space from the time of John Glenn's flight, and we often thank the people working at the tracking stations as we pass by. One woman — Maggie 'Rita' Iaquinto, VK3CFI — in south-east Australia even relayed my ham radio signals at two in the morning her time so I could talk from Endeavour [on STS-59] to a doctor [Valeri Polyakov] spending more than a year aboard the Russian Mir station."

The book includes excellent documentation for each of the photos, with the location of the photo, and a brief caption describing the photo's contents.

"Orbit" is published by the National Geographic Society and distributed by Random House. (ISBN 0-7922-3714-5). At $US40 retail it isn't a casual purchase, but the quality of the photos and excellent documentation makes the book worth it for anybody who's interested in what our planet looks like from space.

(This review came from the AMSAT newsgroup on the Internet, and was written by Philip Chien, KC4YER.)

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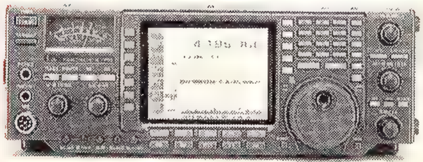

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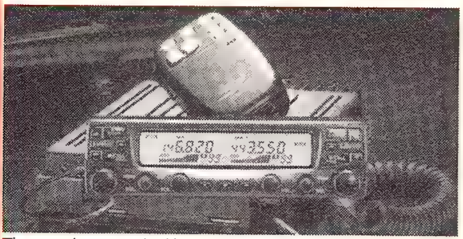

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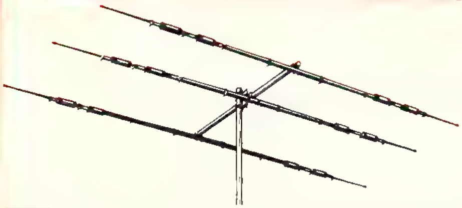

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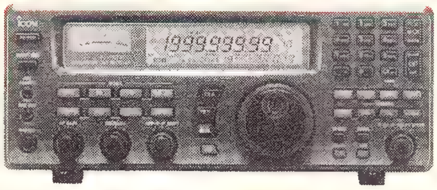
Front to back ratio, dB	16	14	14
Power, watts PEP	2000	2000	2000
Boom length, metres	5.48	4.27	4 27
Longest element, mtrs	9.75	8.45	7 66
Turning radius, mtrs	5.49	4 72	4.4
Max mast size, mm	50	50	50
Wind load, square metres	.51	47	.38
Weight, kg	16.8	12.3	10.24
Price (inc tax)	$1099	$916	$689



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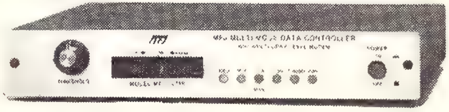
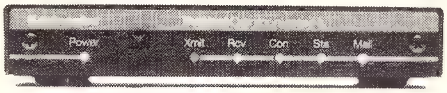


MFJ1270C	1200bps VHF/UHF packet	$249
MFJ1276	HF/VHF/UHF packet+PACTOR	$349
MFJ1278B	10 mode multi-mode controller	$599
MFJ1278B-DSP	DSP added to MFJ1278B	$759

MFJ Packet options and accesories

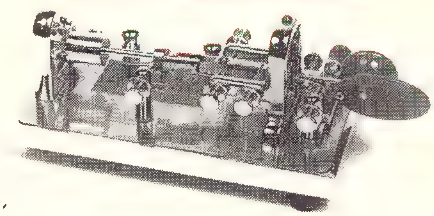
MFJ780	DSP add-in card for MFJ1278B	$219
MFJ781	External DSP for any TNC	$279

Kantronics



KPC-3	1200bps VHF/UHF packet	$249
KPC-9612	1200/9600bps dual port packet	$459
NEW KPC-9612+	coming - run out special	$395!
KAM+	Deluxe miulti-mode	$669

NEW Vibroplex prices



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Vibroplex is only part of our great range of CW keys and keyers, call for details of other fine products we have in stock!

MFJ Antenna Tuners

MFJ901B	200W Versatuner	$149
MFJ910	Mobile antenna matcher	$45
MFJ921	2 mtr 300W tuner	$155
MFJ924	70 cm 300W tuner	$155
MFJ931	Artificial ground tuner	$169
MFJ941E	300W compact GP tuner	$230
MFJ945E	300W mobile tuner	$209
MFJ948	Deluxe 300W (no D/L)	$270
MFJ949E	Deluxe 300W	$299
MFJ962C	1.5kW tapped inductor	$525
MFJ971	200W Portable tuner	$190
MFJ986	3kW Diff-T roller inductor	$629

MFJ989C	3kW Deluxe roller inductor	$735

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A whole years QST, QEX and NCJ magazines in a single CD-ROM - how convenient! With power full reader technology the diagrams and photos appear inseparate windows. Fully searchable text. Requires 386 or better with Windows 3.1 or later.

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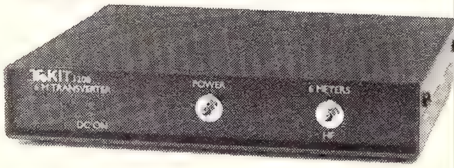

Help reclaim this fascinating band! Six metres is the VHF DX band and even now offers regular overseas contacts with just a little effort. The TT1208 kit is the ideal, low cost way, to get going on 6 metres and find out what only the elite have known for years!

- Requires 3-5W input on 20 metres
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TT1208 8W 6 metre transverter **$199**

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- Requires PC clone min: 8088 @ 8MHz, 1 COM port
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- User friendly interface with mouse support
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Most radios with a computer control capability can be controlled with ScanCAT-GOLD - AOR (3000A, 8000), Drake (R8, R8A), Kenwood (R5000), Icom (R71A, R72A, R7000, R7100, R8500), Yaesu, JRC, Watkins-Johnson, Lowe and the Tandy PRO series with OptoScan boards fitted (OS456, OS535).

No longer do you need multiple programmes, ScanCAT supports all these radios from one programme - just choose from the menu!

With ScanCAT you get advanced scanning features, logging to disk, new frequency searching and when your radio has squelch detect you can perform a spectrum analysis whilst monitoring.

Latest version has enhancements including file importing, dual scan control for Icom radios and decodes CTCSS & DCS with the OS456 and OS535 boards.

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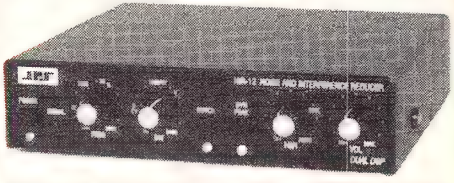

NIR-12 Professional Dual-DSP Noise & Interference reduction unit

- Superior noise reduction on audio signals
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- Notch filter removes:
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JPS NIR-12 DSP system **$679**

Other JPS products also available:

NRF-7	General purpose noise reducer & filter	$399
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NTR-1	Wideband noise and tone remover	$332
NF-60	Spectral notch filter	$319
SSTV-1	'DSP Slow Scan TV filter	$319

OPTOELECTRONICS

XPLORER Test Receiver

All the information, in one hand!

In one convenient handful the amazing new **Optoelectronics** XPLORER Test Receiver not only finds signals for you, but it will tell you frequency and deviation as well as decoding sub-audible and DTMF tones. Sweeping the range 30 to 2000MHz in less than 1 second the Xplorer will lock on to any signal in the nearfield and demodulate the FM audio for monitoring. You also see frequency on the LCD display along with other information about the signal.

- Frequency range: 30MHz - 2GHz
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- Audio frequency response: 50 - 3000Hz
- Auto sweep time: <1 second 30-2000MHz
- Internal speaker, headphone jack, tape control jack, serial interface connector, rotary encoder & flexible push button panel.
- Easy to read LCD display with EL backlighting
- Internal 7.2V 850mAh NiCd battery
- Rapid charging (<1hr) with intelligent charging controller
- NMEA-01283 interface for GPS receiver

XPLORER Test Receiver **$1700**

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Don't miss that rare DX station because your receive antenna wasn't tuned correctly! With the MFJ959B you can provide proper impedance matching for optimum signal transfer and up to 20dB of preamplifier gain. A 20dB attenuator helps reduce overload problems. Select between two antennas and two receivers. Requires 9-18V DC, 229 x 50 x 150mm.

MFJ959B Receiving tuner/preamp **$225**

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John Batty, VK4MBK, reports on his

SHORTWAVE LISTENING WITH A DIFFERENCE

Forget the broadcast stations — here's where to find the *really* interesting ones...

John Batty grew tired of listening to your "run of the mill" shortwave stations some time ago and now concentrates on the "very unscheduled" operators. Few would deny that his loggings are somewhat more interesting than the commercial stations...

Rumour has it that in March 1997 (I'm writing this in late 1996) a huge military exercise is scheduled to take place in Australia, lasting for three months.

Approximately 15,000 US Marines are to take part — the largest contingent ever in an Australian exercise.

Traditionally, the Marines are a self-contained fighting force; that is, they have their own land, sea and air forces. It is feasible, then, that at various times during the exercise you could find US Marine vehicles, troops, ships or aircraft operating within range of your scanner, so I have put together this list of known US Marine VHF/UHF radio frequencies and callsigns, in case you find the Leathernecks operating in or over your local area.

US Marine Aviation Callsigns

AB 6-- EA-6B aircraft VMAQ-2 (elec warfare)
AC 4-- A-6E aircraft VMA-533 (strike fighter)
ACES VMA-231 squadron callsign
ALICE EA-6B aircraft VMAQ-2
ANGEL F/A-18D aircraft VMFA-235 (fighter)
ANTLER HMM-166 squadron callsign
ATTIC F/A-18D aircraft VMFA-451
AVRY KC-130F aircraft VMGRT-253 (tanker)
BANSHEE EA-6B aircraft VMAQ-1
BAT A-6E aircraft VMA(AW)-241
BAT F/A-18D aircraft VMFA-242
BATCH F/A-18 aircraft
BEAR KC-130F/R aircraft VMGR-252
BEATLE OV-10A/E aircraft (COIN, Forward Air Control)
BENGAL F/A-18D aircraft VMFA-224
BH --- KC-130F/R aircraft VMGR-252
BIDDY General call Marine Corps Air Station
BIRD DOG OV-10A/E aircraft
BLACKSHEEP AV-8B aircraft VMA-214 (STOVL ground attack)
BLADE F/A-18D aircraft VMFA-115
BRAVE F/A-18 aircraft VMFA-321
CAT AV-8B aircraft MAG-13
CAT AV-8B aircraft VMA-311
CF --- AV-8B aircraft VMA-211
CG --- AV-8B aircraft VMA-231
CHEER Heavy-lift aircraft of VMAW-242
CJ --- CH-53A/D helicopter HMH-461 (med/heavy lift)
CLOSEOUT 2MAW AWACS Ops
COMBAT F/A-18D aircraft VMFA-121
COWBOY VMFA-112 squadron callsign
CR --- AV-8B aircraft VMA-542
CY --- EA-6B aircraft VMAQ-2
DA --- OA-4M aircraft HMS-32 (attack/recce)
DARKE AV-8B aircraft
DB --- F/A-18A aircraft VMFA-235
DC --- F/A-18A aircraft VMFA-122
DEERLODGE EA-6B aircraft
DEVIL F/A-18D aircraft VMFA-232
DN --- F/A-18A aircraft VMFA-333
DOG AV-8B aircraft (training)
DR --- F/A-18A aircraft VMFA-312
DRAFT KC-130T aircraft VMGR-234
DRAGON F-14 HMM-268 (air superiority)
DT --- A-6E aircraft VMA(AW)-242
DW --- F/A-18A aircraft VMFA-251
EA --- A-6E aircraft VMA(AW)-332
EASTER 2nd Marine Corps Aircraft Wing
EASY EA-6B aircraft VMAQ-2
EC --- F/A-18A aircraft VMFA-531
ED --- A-6E aircraft VMA(AW)-533
EG --- CH-46E Helicopter HMM-263 (med lift)
EH --- CH-46E Helicopter HMM-264
ELVIS HMM-261 squadron callsign
EM --- CH-46E Helicopter HMM-261
EN --- CH-53E Helicopter HMH-464
EP --- CH-46E Helicopter HMM-265
ER --- OV-10D aircraft VMO-1
ERIC F/A-18D aircraft VMFA-332
ES --- CH-46E Helicopter HMM-266
ET --- CH-46E Helicopter HMM-262
EVIL EYE HMM-261 squadron callsign
EW --- HMS-24 squadron callsign
FAT BOY KC-10 Extender aircraft (tanker)
FOKKER CH-46E helicopter
GATOR VMA-142 squadron callsign
GHOST F/A-18D aircraft VMFA-531
GR --- KC-130F aircraft VMGRT-253
GREY GHOST VMFA-531 squadron callsign
GREY HAWK HMH-161 squadron callsign CH-53E helicopter
GREY HOUND MH-53 helicopter (mine counter measures)
GUNFIGHTER F-14 aircraft HMLA-369
GX --- CH-53A/CH-46E helos HMT-204
HANDLER CH-53E helicopter
HAWK A-6E aircraft VMA(AW)-533
HERKY KC-130T aircraft VMGR-234
HF --- AH-1T/UH-1N helos HMLA-269 (light attack)
HOTEL A-6E aircraft
HOTFOOT OV-10 aircraft
HUMMER UH-1 helicopter MAG-49
JUMP AV-8B aircraft
KC --- A-6E aircraft VMAT(AW)-202
KD --- TAV-8A/AV-8B aircraft VMAT-203
KNIGHT VMFA-314 squadron callsign
KNIGHTRIDER HMM-164 squadron callsign
LANCER F/A-18D aircraft VMFA-212/232
LIGHTNING A-6E aircraft
LINUS VMFA-311 squadron callsign
LOBO C-9A or B Nightingale or Skytrain aircraft (Medevac or cargo)
LUSTY F/A-18 aircraft VMA-542
MA --- VMFA-112 squadron callsign
MAILTRUCK AV-8B aircraft
MARINE 1 UH-60N/VH-3D Helo carrying President (ASW)
MAT CH-53 helicopter
MB --- VMA-142 squadron callsign
MD --- VMA-543 squadron callsign
ME --- VMA-133 squadron callsign
MF --- VMFA-134 squadron callsign
MG --- VMFA-321 squadron callsign
MISTER F/A-18D aircraft VMFA-332
ML --- CH-46 helicopter HMM-764
MM --- UH-1N helicopter HML-767
MN --- CH-46 helicopter HMM-770
MOONLIGHT HMM-764 squad CH-46 helo
MOTLEY MAG-49 squadron callsign
MP --- AH-1J helicopter HMA-773
MQ --- CH-46 helicopter HMM-774
MR --- UH-1 helicopter HML-765
MS --- CH-53 helicopter HMH-769
MT --- CH-53 helicopter HMH-772
MU --- OV-10A aircraft VMO-4
MUSIC KC-130F/T aircraft VMGR-234
MX --- Various helos Presidential Flight HMX-1
NAON USS New Orleans Amphibious Assault Ship, Helicopter (LPH-11)
NBHE USS Belleau Wood Amphibious Assault Ship, GP (LHA-3)
NE 3-- A-6E aircraft VMA(AW)-121
NEBP USS Wasp Amphibious Assault Ship, Multi-Purpose (LHD-1)
NHOV USS Saipan Amph Ass Ship, GP (LHA-2).
NICKEL F/A-18D aircraft VMFA-122
NIGHT F/A-18D aircraft VMFA-314
NIGHT HAWK UH-60N/VH-3D Helicopter HMX-1 (VIP)
NIGHTMARE AV-8B aircraft VMA-214
NINJA F/A-18D aircraft VMFA-121
NJPX USS Nassau Amph Ass Ship, GP (LHA-4).
NLHA USS Tarawa Amph Ass Ship, GP LHA-1.
NMFG USS Peleliu Amph Ass Ship, GP (LHA-5).
NOKI USS Okinawa Amph Ass, Helo LPH-3
NOUD USS Inchon Amph Ass, Helo (LPH-12)
NWQU USS Tripoli Amph Ass, Helo (LPH-10)
NXXG USS Iwo Jima Amph Ass, Helo (LPH-2)
NY --- KC-130 aircraft VMGR-452
OPIE 2MAW tactical communication
OTIS KC-130F/R aircraft VMGR-252
PEDRO Marine or Navy SAR craft on non-SAR
PF --- CH-46E helicopter HMM-364
PHOENIX HMT-302 squad call CH-53 helo
PROUD EAGLE USS Tarawa Landing Ship Helo, Attack (LHA-1). Also uses callsign NLHA
QD --- KC-130F aircraft VMGR-152
QG --- VMA-131 squadron callsign
QH --- KC-130F/T aircraft VMGR-234
QK --- UH-1 helicopter HML-771
QL --- UH-1 helicopter HML-776
QM --- CH-53 helicopter HMH-777
QP --- VMA-124 squadron callsign
QR --- KC-130F/R aircraft VMGR-352
QR --- VMA-322 squadron callsign
QS --- CH-46 helicopter HMM-766
QT --- AH-1J/UH-1N helicopters HMT-303

RAIDER C-130 aircraft VMA-513
RAIDER KC-130F/R aircraft VMGR-352
RAM VMA-214 squadron callsign
RASPBERRY Any Marine Corps Air Station
RATTLER F/A-18D aircraft VMFA-323
REBEL OV-10 aircraft VMO-4
REMINGTON A-6E aircraft
RF --- VMFP-3 squadron callsign
RHINO VMFP-3 squadron callsign
RM --- EA-6B aircraft VMAQ-4
SANDMAN F/A-18 aircraft
SC --- VMAT-102 squadron callsign
SCARFACE HMLA-367 squadron callsign
SH --- VMAT-101 squadron callsign
SHAM F/A-18 aircraft
SHOOTER F/A-18 aircraft VMFAT-101
SIGHTSEER OV-10 aircraft
SILVER EAGLE F/A-18 aircraft VMFA-115
SM --- AH-1J helicopter HML/A-369
SMOKE VMFA-134 squadron callsign
SN --- AH-1W/UH-1N helicopters HML/A-169
SNAKE F/A-18 aircraft VMFA-323
SNIPER F-5E/F craft VMFA-401 (fighter)
SNOOPY F/A-18 aircraft
STINGER HMLA-267 squadron callsign
SWEDE F/A-18 aircraft VMFA-451
SWEEP F/A-18D aircraft VMFA-122
TANGO A-6E aircraft VMA-224
THUNDERBOLT F/A-18D aircraft VMFA-251
TIGER F/A-18D aircraft VMFA-224
TIGER HMS-361 squadron callsign
TIGERTAIL VMAQ-2 squadron callsign
TITAN KC-130F aircraft VMGRT-253
TOREY AV-8B aircraft VMA-211
TV --- AH-1T/UH-1N helicopters HML/A-167
US --- CH-46E/CH-53A/D helicopters HMT-301
UT --- CH-53E helicopter HMT-302
UU --- OV-10A/D aircraft VMO-2
UV --- UH-1N/AH-1T helicopters HML/A-267
VE --- F/A-18A aircraft VMFA-115
VIKING F/A-18D aircraft VMFA-225
VIPER HMAL-169 squadron callsign
VK --- EA-6B aircraft VMFA(AW)-121
VL --- AV-8B aircraft VMA-331
VM --- F/A-18A aircraft VMFA-451
VT --- UH-1N helicopter HML/A-367
VW --- F/A-18A aircraft VMFA-314
WA --- HMS-12 squadron callsign
WAKE AV-8B aircraft VMA-211
WALKER HMT-301 squadron callsign
WARHORSE HMH-465 squadron callsign
WARLORD F/A-18 aircraft VMFA-451
WASP F/A-18 aircraft
WB --- VMFT-401 (aggressor training)
WD --- VMFA-212 squadron callsign
WE --- VMFA-214 squadron callsign
WF --- AV-8B aircraft VMA-513
WK --- A-6E aircraft VMA(AW)-224
WL --- VMA-311 squadron callsign
WOLFPACK HMH-466 squadron callsign
WP --- AV-8B aircraft VMA-223
WS --- F/A-18A aircraft VMFA-323
WT --- F/A-18A aircraft VMFA-232
YANK F-5E/F aircraft VMFA-401
YANKY KC-130T aircraft VMGR-452
YAZOO OV-10 aircraft MAG-29
YELLOWBLOOD Marine Force Pacific HQ
YF --- CH-53A/D helicopter HMH-462
YH --- CH-53A/D helicopter HMH-463
YJ --- CH-53E helicopter HMH-465
YK --- CH-53E helicopter HMH-466
YL --- CH-53A/D helicopter HMH-362
YM --- CH-46E helicopter HMM-365
YN --- CH-53A/D helicopter HMH-361
YP --- CH-46E helicopter HMM-163
YQ --- CH-46E helicopter HMM-268
YR --- CH-46E helicopter HMM-161
YS --- CH-46E helicopter HMM-162
YT --- CH-46E helicopter HMM-164
YU --- HMS-13 squadron callsign
YW --- CH-46E helicopter HMM-165
YX --- CH-46E helicopter HMM-166
YZ --- CH-53A/D helicopter HMH-363

I would be very interested to hear of callsigns and frequencies you find active during the exercise. Now a quick roundup of loggings for this month:

Some of the tactical callsigns being heard lately on **8971kHz** are also showing up with initial radio checks on **8968kHz** and **11,175kHz**; VIF and R3G called Hickham for the NIGHTWATCH frequencies and were given Primary F731 (**6683kHz**) and Secondary F576 (**11,153kHz**). These are MYSTIC STAR net frequencies, the VIP HF net controlled by Andrews AFB.

8971kHz remains active with nightly tactical nets from approximately 1100z onwards. S4JG seems to be a regular control station.

The Canadians have been flying around the South Pacific with CANFORCE 1534 and CANFORCE 1597, which identified themselves as CC-130 Hercules, heard ICW AF Sydney, Auckland and Nandi, terminal area forecasts required for Tahiti, Whenuapi, Wellington and Nandi. Both aircraft were heard on **8867kHz**, **8975kHz** and **13,200kHz**; possibly activity connected with the Fincastle maritime reconnaissance competition, held in NZ this year.

Also heard on **8868kHz** was NASA 717, an Ames Research Centre DC-8-72 aircraft on a Tahiti to Christchurch track.

GOLDEN HAWK, an over-the-horizon radar facility in Bangor, Maine, USA was heard controlling an air interception by GOLDEN 12 on **8968kHz** at 1316z. All position and identification information was given in cipher. GOLDEN 12 was an unidentified Air Combat Command aircraft. At 1325z on **11,175kHz** a tanker aircraft identified only as '74' was having a long discussion with McGuire AFB; he was waiting for his next customer on Air Refuelling Track 204 and McGuire needed him to be ready for an aircraft they had vectored onto Track 212. It didn't matter which choice he made, someone would go without fuel. Both these tracks are over northwestern Massachusetts.

RTTY test tapes from FUF, Fort de France Naval, at Martinique in the Windward Islands received around 0825z on **8478kHz** strength 5.

That's all I have room for this month! Happy New Year, and we'll see you then...

US Marine VHF/UHF Frequencies (MHz)

Tactical: 32.450 In common with US Navy
Portables: 30.450; 40.550; 142.0 and 142.8 Base/Mobiles
Crash Crews: 40.820 & 140.875 common with US Navy
Search and Rescue: 41.950; 282.800 Navy, Army, USAF.
Fire Communications: 32.050, 138.800 USN; 140.875 Crash Crews and USN; 149.500 In common with USAF.
Medical Services: 149.625 In common with US Army
Military Police: 139.675 USN; 140.025 Security, USN; 140.675 Guard, USN; 140.700 ditto; 140.775 USMC/Naval Investigative Service; 141.500 Security, US Army; 149.275 Area Guard, in common with USAF. **Range Data**: 32.800
Miscellaneous: 32.610; 40.350 US Navy; 41.700 US Navy and Coast Guard Reserve; 49.850 Military Affiliate Radio System (MARS) all US Forces; 140.750 Public Works
US Marine Aviation:
225.700 Miscellaneous; 242.000 Air to Ground with US Navy; 243.000 Military Emergency (all Services); 263.000 Air to Ground with US Navy; 271.700 Tower Freq USM.C./US Navy; 272.300 Air to Ground with US Navy; 272.400 Air to Ground with US Navy; 272.300 ATIS with US Navy; 273.800 Air to Ground data link with US Navy; 274.900 Clearances with US Navy; 276.800 Air to Ground with US Navy and Army; 277.000 Air to Ground with US Navy; 277.900 Coast to Ship; 279.300 Air to Ground with USAF.; 281.700 Air to Ground/Approach with US Navy; 281.900 Air to Ground with US Navy; 284.200 ATIS with US Navy; 285.100 Air to Ground with US Navy; 286.000 Artillery Obs with US Navy; 293.100 Air-Ground with US Navy; 299.500 Air-Ground with US Navy.

Marine aircraft will also probably show up on USAF, US Navy, RAAF and RAN HF frequencies. US Marine Aviation squadron designations in the callsign list which follows can be translated by the letters contained: All fixed-wing squadron designators begin with **VM**. There can be several following letters depending on function.

VM = Aviation, Marine **F** = Fighter **A** = Attack **Q** = Electronic Warfare **T** = Training **AW** = All Weather **GR** = Refuelling/Transport **VMO** = Observation Squadron **MAG** = Marine Air(craft) Group **MAW** = Marine Air(craft) Wing

Helicopter squadron designations are similarly broken down: **HM** = Helicopter, Marine **M** = Medium (Helicopter, Marine, Medium) **L** = Light (Helicopter, Marine, Light) **H** = Heavy (eg HMH = Helicopter, Marine, Heavy) **A** = Attack (HML/A = Helicopter, Marine, Light Attack) **T** = Transport

In the case of the US Navy Amphibious Assault vessels listed by callsign, the number in brackets following the name and type is the Hull Number.

For those not familiar with aircraft types, I have listed type beside the first occurrence of each in the callsign list.

AEA DSP-232 *and* PC PAKRATT for Windows

By Paul Butler, VK3DBP

For many years now, a familiar black box has lurked in a corner of the VK3DBP shack, the PAKRATT PK-232 data controller from Advanced Electronic Applications, which we all know as **AEA**. Mine was the first of the PK-232 series, so it is showing its age a little compared to more recent versions. The electronics inside the black box has performed very well over the years and hopefully will continue to do so for much longer. It handles HF packet at 300 bits per second (BPS) and VHF packet at 1200 bps through two radio ports, as well as coping with facsimile, radioteletype (RTTY), AMTOR and Morse.

The PK-232 was particularly put out recently when a much younger cousin arrived temporarily for review. The most noticeable feature of this device, the new **AEA DSP-232** multi-mode controller, is the change from the black box to a more stylish grey and white colour scheme and a definite streamlining of the buttons and lights which grace the front panel of the older model. But there is much, much more than a facelift to consider — the DSP-232 has taken on features which must make it one of the best equipped multi-mode boxes around.

Overview of the DSP-232

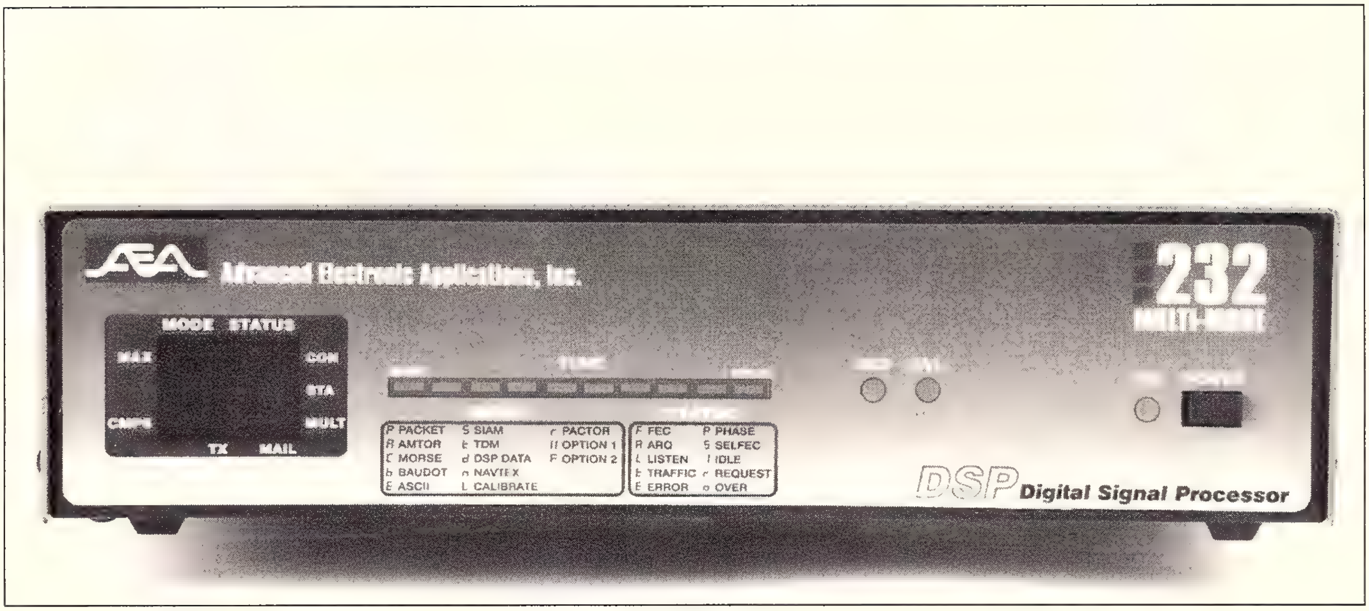
Let me say from the outset that one disappointment with the DSP-232 is its lack of support for my favourite mode, slow-scan television (SSTV). Perhaps this is not really a major issue, since SSTV can be handled well with a simple 741 chip as the interface. The avid packeteer or satellite watcher is well served by the DSP-232, however, as it includes all that is needed for these modes amongst its multitude of modems (17 in all!).

First, then, a few words from AEA itself about its DSP-232: "The DSP will transceive in the following modes: • AX.25 packet on HF (300 bps), VHF and UHF (1200 bps and 9600 bps); • Baudot and ASCII RTTY; • AMTOR/SITOR CCIR Rec. 476 and 625; • Morse Code; and • PacTOR.
"In addition, the DSP receives the following modes: • NAVTEX marine broadcasts and AMTEX amateur bulletins; and • Bit-inverted Baudot RTTY."

The differences between the original PK-232 and the later DSP-232 clearly reflect developments in amateur radio digital modes over the years. High-speed packet is included to cater for the growing number of terrestrial packet links operating at this speed, as well as numbers of amateur satellites using the high-speed mode. PacTOR is on the rise, too and has been included in multi-mode boxes for some time. Back to AEA:
"The DSP also has the following special features: • Gateway firmware which allows the DSP to operate as a node and identify TCP/IP, TheNET, and NET/ROM stations. • SIAM (trade mark) for Short Wave listening. • Memory ARQ for better HF throughput in marginal conditions. • High-power, high-speed Digital Signal Processor. • Packet/AMTOR/PacTOR MailDrop; • KISS mode. • Host mode."

This list of features covers most amateur radio needs, particularly as the amateur packet networks are moving increasingly to more exotic modes such as TCP/IP and TheNET. The DSP-232 would appear to be particularly well equipped to operate as part of the message-forwarding packet system. It could, for example, be set up for PacTOR, making full use of the digital signal processor on HF, or route messages through to a high-speed VHF or UHF link. There was no evidence, however, that both ports could be operated simultaneously, so an automated message forwarding system would still need two units.

At first view, the inclusion of SIAM looked attractive, since it can be very annoying to find a strong signal in some unknown digital mode and spend ages fiddling with a host of parameters to try to decode it. In practice, however, for much of the time during testing here, SIAM was as confused as I was with a variety of signals. Possibly, with more practice, an exotic mode enthusiast could make SIAM work more effectively. Once a signal has been identified by SIAM, selecting the correct mode for the DSP-232 involves just a few keystrokes.



Setting up

Getting the DSP-232 going was pretty straightforward. There is just one manual control to operate and it turns the power on and off! Everything else is managed through the software, which is discussed in more detail below.

When power is first applied from a 13V plug pack, the front panel comes alive with lights. A green POWER indicator tells you it is on. A green Data Carrier Detect (DCD) light comes on in HF mode when the level into the unit is set correctly, and in VHF/UHF packet mode when packets arrive, while the red Overload (OVL) light indicates too high a level at the input (so turn the volume down!). The standard tuning indicator has been streamlined to a neat line of red boxes, with the ends labelled MARK and SPACE.

Finally, no fewer than *twenty* red lights on the older PK-232 have been replaced by two 7-segment LED displays, which between them present the operating status of the whole box of tricks. AEA seems to be quite proud of this feature, as it is described in some detail in the advertising.

Each mode has its own symbol and a key to these symbols is provided on the front panel but in quite small lettering. Eventually the user will no doubt get used to the set of symbols but not all of them are intuitive (eg P for Packet but E for ASCII).

The rear panel has the sockets for connection to the transceivers and computer, together with adjusters for level. The computer link is RS-232 and a cable is provided with a DB-9 termination at each end. This required a DB-9 to DB-25 converter to couple up to the computer here.

Received audio can be picked up from jack sockets, one for each port. A full transmit/receive connection would use instead the 5-pin DIN socket for Port 1 and the 8-pin DIN socket for the 9600 bps modem on Port 2. A frequency-shift keying (FSK) connection is provided, too, for direct connection to the equivalent output available on some transceivers.

Connecting the unit to other equipment should not be a problem in most instances. Wiring diagrams are provided in an appendix to the handbook for many of the commonly-available transceivers and a bit of care with the soldering iron is all that is needed. In many cases, the transmit side of the DSP-232 connects to the microphone socket on the front panel of the transceiver and the received audio is picked up from an external loudspeaker socket.

This is a satisfactory arrangement for a permanent digital installation but it does call for changing plugs if the transceiver is sometimes used conventionally for speech. Also, it is difficult to monitor the audio under these conditions, making tuning a bit of a problem. Some rigs have a socket on the back for data connections which removes the need to use the microphone socket and external loudspeaker connection, so shop carefully if you are setting up a system from scratch.

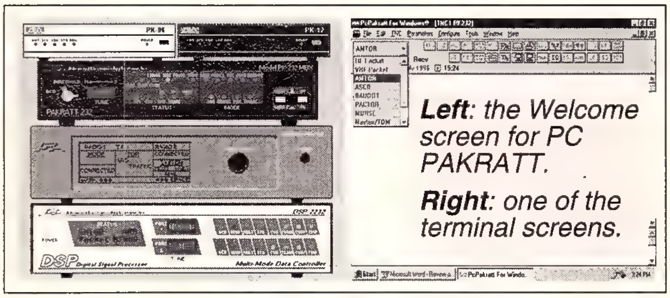
Operating the DSP-232

The unit must be calibrated before using it on the air, as incorrect settings could result in over-modulation. The process is described in detail in the handbook. A loopback link is provided so that internal tests can be run to make sure everything is working properly.

Initial on-air tests are conducted at low level, to avoid overloading the transmitter's final stages and to prevent garbage going out to the rest of the world. It should be remembered that, even once the system is set up correctly, prolonged use of full power for digital modes is to be avoided at all costs, as the transmitter is working hard most of the time in these full duty-cycle modes.

Details of setting up the DSP-232 take up only the first 10 pages or so of the manual. The rest of the substantial document is devoted to the many commands needed to make the box work properly.

But most of this can be ignored, thankfully, because of the other inclusion in the package provided for review — a copy of **PC PAKRATT for Windows**, Version 2. The unit can be operated from a simple terminal program — the PK-232 here spends much of its time driven by a dumb terminal (do they still make them?) — but good software makes the job much easier. So we'll take a quick look at the software next, then come back to the DSP-232 and put it through its paces.



Left: *the Welcome screen for PC PAKRATT.*

Right: *one of the terminal screens.*

PC PAKRATT for Windows

The software comes with its own installation routine, which asks for your name, callsign and software serial number, then loads the program and sets up the appropriate program group. Running the program produces a striking screen showing a picture of many of the products from AEA... but not the DSP-232!

PC PAKRATT is designed to operate all of AEA's digital boxes and claims to be able to recognise each one. On subsequent occasions, the startup page should show only your digital controller.

The program not only failed to recognise the DSP-232 but did not even list it as an option when the manual configuration procedure was followed. This was all somewhat confusing, as the handbook confirmed support for the DSP-232 but the on-line Help file did not!

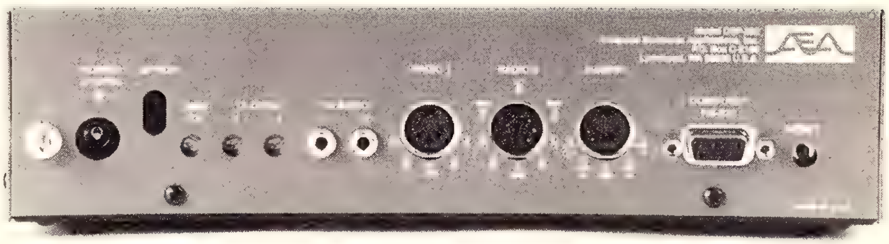
No reference to the DSP-232 was found in the program, although the DSP-1232 and DSP-2232 were included. The AEA catalogue did not help here either since, on the DSP-232 page, it advertises the PC PAKRATT program as "...suitable for your PK-900..."!

I tried the PK-232 configuration, which worked satisfactorily but rejected a few of the initialisation parameters. This did not seem to affect the subsequent operation of the TNC but not every mode could be tried for this review, so problems may arise. There are probably upgrades to the software available, possibly through AEA's presence on the Internet.

Once communication with the TNC is established, a window opens for that connection (as seen above on the right). The mode is selected from a drop-down menu and the program does the rest. Received data appears in the main section of the window and a separate area is used for entering text to be sent. This allows the operator to type ahead and correct any spelling mistakes before the text is sent to air. Scroll-back is available to look again at text which has disappeared by scrolling off the top of the screen.

Changing parameters involves dropping down lists and choosing the appropriate value, or 'pressing' buttons arranged on a standard Windows tool bar. This really does streamline the operation of the unit and would be particularly valuable when operating two of them in different modes.

The DSP-232 contains a lithium backup battery so it remembers the last settings used and starting up next time is quite quick. A reset button is provided on the rear panel to send the whole configuration back to the factory default; alternatively, the battery can be removed, in which case the software can be used to remember the last configuration and restore it on starting up again.



Mail drop facilities are included, so outgoing mail can be prepared off-line or on-line and incoming mail can be handled on the fly or saved away for later. This is not an auto-forward system, however, so different software would be needed to operate the DSP-232 as a gateway, for example, between PacTOR and the packet network.

The PAKRATT software makes handling the DSP-232 a breeze, particularly when looking around for interesting things to decode. Swapping from mode to mode or changing parameters within a given mode is simple and quick. It is this ability which makes decoding easier, rather than the SIAM system which often simply confirms what you have already deduced about an initially unknown mode.

On the air

The DSP-232 behaves well on the air, as would be expected of such a sophisticated late-model device. On HF packet, for example, it was able to pull readable packets out of a very weak and noisy signal on 20 metres at times when the tones were barely audible in the monitored audio. This is a direct result of the digital signal processing, which replaces the hard-wired filtering of earlier models.

The incoming audio is digitised by the Analog Devices 2105 Digital Signal Processor, which is part of a system managed by a Motorola 68340 processor. The signal is then digitally filtered and analysed before being passed to a second processor for protocol conversion. When transmitting, the opposite process is followed.

The chip set is upgradable, so as new developments occur, you can keep your DSP-232 up-to-date with the latest. A weather facsimile (WeFax) option is already available for this unit and an 'option slot' on the rear panel will allow further hardware expansion.

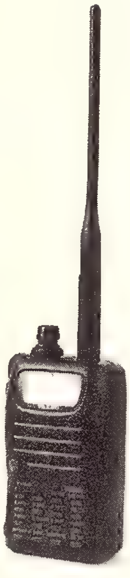
On the Morse side, the filtering used in the DSP-232 worked well to lift CW out of the noise. Morse Code was designed for the human ear and no machine can match the brain's performance in getting information out of next-to-nothing. This unit does as well as can be expected, particularly with machine-generated code.

But it does get a little annoying when the various parties to a CW conversation are on slightly different frequencies. The filtering is so narrow that the slight change in the frequency of the tone received means that the signal is lost unless the receiver is retuned. However, as I have found consistently with the older PK-232, the combination of ear and machine works very well.

Congratulations!

We ran a competition in the November and December issues to win a great Yaesu FT-50R dual-band hand-held transceiver. While there were many different reasons why you'd like to own one of these gadgets, there was only one correct answer to its output power, which is rated at five watts.

So it's congratulations to *Maurice Talkes, VK3VTW, of Geelong, Victoria.*



The modems work as expected on VHF and UHF, where signal strength and noise are not an issue. It was not possible to test the unit on signals from satellites but the DSP-232 is well equipped to handle all the current phase-shift keying (PSK) modes used by current amateur satellites. The upgradability will safeguard your investment if new modes appear, as they surely will over the next decade.

Summary

The DSP-232 is a sound product, as expected from a reputable manufacturer such as AEA. It is billed by AEA as the 'Mode Warrior' and, for the serious exotic mode watcher, it provides just about everything you would want. The apparent mismatch between the hardware and the PAKRATT software needs to be resolved but the combination is a powerful one. Its internal architecture reflects the current state of the art in handling digital signals and it will no doubt continue to do so as upgrades appear.

The question to be asked by the potential digital enthusiast is "Do I need all these modes? Do I need high performance on HF?" If the answer is 'Yes' to both questions, then certainly consider the DSP-232 from AEA.

Radio and Communications thanks **Emtronics** for the loan of the review unit.

Specifications

Modem: Analog Devices 2105 Digital Signal Processor running at 12.3 MHz in conjunction with Analog Devices 28msp02 audio CODEC
Processor: Motorola 68340 running at 16.7 MHz
RAM: battery-backed 32K standard, expandable to 256K
ROM: 128K standard, expandable to 256K
Power requirements: +13 VDC (+12 to +16 VDC) @ 1A

Individual Modems:
AMTOR 170: 2125/2295 Hz and 1615/1785 Hz
CW: 750 Hz
PacTOR 200: 2110/2310 Hz and 1600/1800 9600 bps
FSK-425: 2125/2550 Hz and 1275/1700 Hz
FSK-850: 1275/2125 Hz and 2125/2975 Hz
RTTY/BAUDOT 170: 1615/1785 Hz and 2125/2295 Hz
HF Packet 200: 1600/1800 Hz and 2110/2310 Hz
VHF Packet 1000: 1200/2200 Hz
9600 bps Packet (K9NG/G3RUH compatible)
Signal analysis
FAX (zero-crossing)

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KC0996D

Slow Scan TV — is it for me?

Part 2

By Jim Smith, VK9NS

Here's the second part of Jim's special feature about slow scan TV. If you've been looking for a new challenge in radio, this may well be it...

In Part 1 we saw how the basics of the amateur radio SSTV mode had developed and quite a lot of ground was covered. Now we will look at the various standards of the various modes of SSTV. There was a great deal of work going on in various parts of the world to overcome some of the problems being encountered. So names like **Martin**, **Scottie**, **Wrasse** and of course **ROBOT** become part of the language of SSTV.

Originally, SSTV images were limited to an eight-second picture as a result of the compromises needed to fit the SSTV signal into around 3 kHz. The early P7 CRT tubes were round, and so the square format of the picture seemed a natural choice. However, our TV pictures are not 1:1 format but have a 4:3 ratio, and this seems to suit our senses better. The scan converters changed the rules, and made the transmission and reception of high grade B/W and colour images a possibility.

So let us go back to the ROBOT system again. The initial modes available were as follows:

ROBOT black and white modes

SPEED NAME		**SEQUENCE** (Colour)	**RESOLUTION 1** Pixel X Line	**RESOLUTION 2** Pixel X Line	**FORMAT** B X H
SC-1	8s	BRIGHT	128 X 128	160 X 180	1:1
SC-1	16s	‘	256 X 128	320 X 128	1:1
SC-1	16s	‘	128 X 256	160 X 256*	1:1
SC-1	32s	‘	256 X 256	320 X 256	1:1
ROBOT	8s	BRIGHT	160 X 120	160 X 120	4:3
ROBOT	12s	‘	320 X 120	320 X 240	4:3
ROBOT	32{	‘	320 X 240	320 X 240	4:3
ROBOT	36s	‘	320 X™240	320 X 240	4:3

* Similar to SC-1 16s ‘quasi’ can be received in SC-1 8s mode.
Resolution 1 = Resolution of image transfer.
Resolution 2 = Displayed Resolution.

ROBOT MODES: Sync and Line Information:

NAME	**TIME**	**SYNC**	**LINE**
SC-1	8s	5mS	60mS
SC-1	16s	5mS	120mS
SC-1	16sq	5mS	60mS
SC-1	32s	5mS	120mS
ROBOT	8s	10mS	66mS
ROBOT	12s	7mS	100mS
ROBOT	24s	12mS	100mS
ROBOT	36s	12mS	150mS

From the above it can be seen that the B/W format had changed to 4:3 and there was considerable improvement in the quality of the image.

ROBOT colour

The following ROBOT modes were developed and the clone converters made arrangements to deal with these modes using EPROMS and a high stability oscillator.

SPEED NAME		**SEQUENCE Colour**	**RESOLUTION 1 Pixel X Line**	**RESOLUTION 2 Pixel X Line**	**FORMAT B X H**
ROBOT	12s	Y-U-V	160 X 120 A*	160 X 120	4:3
ROBOT	24s	Y-U-V	320 X 120 B*	320 X 120	4:3
ROBOT	36s	Y-U-V	320 X 240 A*	320 X 240	4:3
ROBOT	72s	Y-U-V	320 X 240 B*	320 X 240	4:3

Resolution 1 = Resolution of Image Transfer.
Resolution 2 = Displayed Resolution.
A* Type A = Colour information (R-Y) in every odd line.
Colour information (B-Y) in every even line.
B* Type B = Colour information (R-Y) and (B-Y) in every line.

ROBOT MODES TYPE A: Sync, Line and Colour Information.

MODE	SYNC	B/W IMAGE (Y)	COL.SYNC	R-Y	B-Y
ROBOT 12s	10.5 mS	90 mS	4.5mS	45mS	45mS
ROBOT 36s	7mS	60mS	3.0mS	30mS	30mS

ROBOT MODES TYPE B: Sync, Line and Colour Information.

MODE	SYNC	B/W IMAGE (Y)	COLOUR SYNC 1	COLOUR SYNC 2	R-Y	B-Y
ROBOT 24s	12mS	88mS	6mS	6mS	44mS	44mS
ROBOT 72s	12mS	138mS	6mS	6mS	69mS	69mS

From the above information one can now build up the idea of how the picture image was processed. One must also remember that colour monitors were also a limiting factor in those earlier days.

Now let us take a look at some other modes which show certain differences in timings etc.

Colour bar image

You'll often see the well-known test pattern as used in colour TV work. But what are the colours? In order of appearance, they are white, yellow, cyan, green, magenta, red, blue and black.

The Martin modes

These modes were developed by Martin Emmerson, G3OQD and were called ‘Free-run’ modes or ‘New Mode’. All followed the system of colour sequence scanning and processing mentioned last month in Part 1.

SPEED NAME	**COLOUR Sequence**	**RESOLUTION 1 Pixel X Line**	**RESOLUTION 2 Pixel X Line**	**FORMAT B X H**
Martin M1	G-B-R	320 X 256	320 X 256	4:3
Martin M2	G-B-R	160 X 256	160 X 256	4:3*
Martin M3	G-B-R	320 X 128	320 X 256	4:3
Martin M4	G-B-R	160 X 128	160 X 128	4:3

Resolution 1 = Resolution of image transfer.
Resolution 2 = Displayed Resolution.

M2* Can be received on setting M4.

Martin modes: Sync and line information.

This is straightforward with a 5mS sync pulse and three equal periods of 147mS covering green scan, blue scan and the red scan.

The Scottie Modes

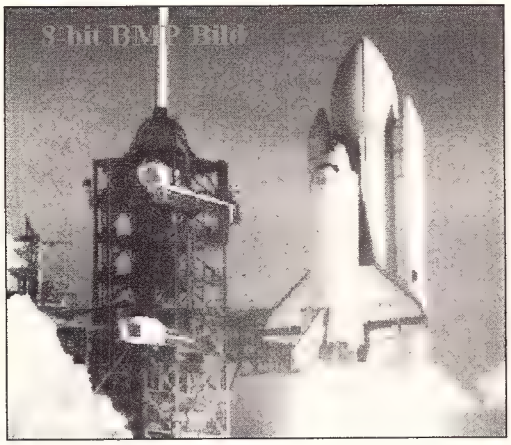
These modes were developed by a Scottish gentleman named Murphy (hence the name Scottie). His call is GM3SBC. The following information shows timing etc:

SPEED NAME	COLOUR Sequence	RESOLUTION 1 Pixel X Line	RESOLUTION 2 Pixel X Line	FORMAT B X H
Scottie S1	G-B-R	320 X 256	320 X 256	4:3
Scottie S2	G-B-R	320 X 128	160 X 250	4:3 *
Scottie S3	G-B-R	320 X 128	320 X 128	4:3
Scottie S4	G-B-R	160 X 128	160 X 128	4:3
Scottie DX	G-B-R	320 X 256	320 X 256	4:3

Resolution 1 = Resolution of image transfer.
Resolution 2 = Displayed Resolution.
Scottie S2* can be received by using S4 settings.

Scottie modes sync, colour and line information:

Scottie 1, 2 and 3: Colour information in three equal 140mS scans covering the green san, the blue scan and the red scan. A sink pulse of 9mS is placed between the blue and red line san.



Scottie 4: Colour information is in three equal 90mS scans covering the green scan, the blue scan and the red scan. A sync pulse of 9mS is placed between the blue and red line scan.

Scottie DX: Colour information is in three equal segments of 347mS scans covering the green, the blue and the red scans. A sync pulse of 9mS is placed between the blue and red line scan.

Wrasse SC-2 modes

The SC-1 and SC-2 modes were developed in Germany by Volker Wrasse. The current SC-2 mode is a 'free-run' mode.

SPEED NAME	COLOUR Sequence	RESOLUTION 1 Pixel X Line	RESOLUTION 2 Pixel X Line	FORMAT B X H
SC-2 30s	R-G-B	256 X 128	320 X 128	4:3
SC-2 60s	R-G-B	256 X 256	320 X 256	4:3
SC-2 120s	R-G-B	512 X 256	320 X 256	4:3
SC-2 180s	R-G-B	512 X 256	320 X 256	4:3

Resolution 1 = Resolution of image transfer.
Resolution 2 = Displayed Resolution.

Wrasse modes sync and line information:

MODE	SYNC	RED	GREEN	BLUE
SC2 30s	5mS	58mS	117mS	58mS
SC2 60s	5mS	58mS	117mS	58mS
SC2 120s	5mS	117mS	235mS	117mS
SC2 180s	5mS	235mS	235mS	235mS

Note the R-G-B sequence and the unequal times per colour. Also notice the high definition possible.

The VIS Code

The introduction of this code by ROBOT Inc became a very useful tool to identify mode, speed and other information about the SSTV picture. The following gives the basics of the VIS system.

Firstly, VIS is part of the vertical sync pulse and consists of a 10-bit code each 30mS long. The first bit — the **start bit** — and the last bit — the **stop bit** — are represented by a 1200 Hz tone. The remaining information of the VIS is coded into the remaining eight bits, which includes one bit (even) parity. So there are 128 possible combinations.
Logic '0' is represented by 1300 Hz.
Logic '1' is represented by 1100 Hz.
Stop/start is represented by 1200 Hz.
So we have MSB P b7 b6 b5 b4 b3 b2 b1 LSB
To send the 8 bit code for Decimal Code 43 the following happens:

START	1200 Hz.	30mS		
b1 = '1'	1100 Hz.	30mS)	b1/b2	Colour B/W Info
b2 = '0'	1300 Hz.	30mS)		
b3 = '1'	1100 Hz.	30mS	b3	Horizontal Resolution
b4 = '0'	1300 Hz.	30mS	b4	Vertical Resolution
b5 = '1'	1100 Hz.	30mS)		
b6 = '0'	1300 Hz.	30mS)	b5,b6,b7	Mode/Speed/Type
b7 = '1'	1100 Hz.	30mS)		
Parity	1300 Hz.	30mS	Even	
STOP	1200 Hz.	30mS		

So far, almost 40 different SSTV modes have been given VIS codes. There is certainly value in studying the various modes and timings etc, since it gives one a good idea of how SSTV has developed. For example, the Scottie DX mode is very good and capable of really fine results.

PASOKON

Meanwhile, outside the realms of hardware systems like ROBOT, the computer-driven systems were coming to the fore. In the case of the PASOKON system, which first appeared in QST several years ago, a great deal was done to provide a superb SSTV system driven by the PC.

The system used a 'plug-in board' which had been fully tested and was ready to go. However it was also possible to buy the board as a kit of parts. This appealed to the radio amateurs who like to build their own and possibly save a few dollars in the process.

These days Pasokon (now on V3) is only available as a complete and tested board. The company's owner told me that the large number of faulty home-brew boards being returned had became a major problem. The usual variety of faults were experienced... wrong component values, poor soldering, failure to read all instructions carefully, and so on.

We'll conclude this three-part series next month!

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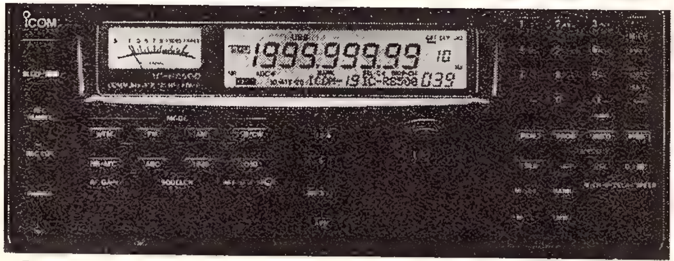
Arguably the most user friendly, ultra wide band, hand held, scanner receiver on the Australian market. Comprehensive LCD shows most functions. 25MHz to 1300MHz frequency coverage, 400 memory channels in 20 individual selectable banks, frequency limit search mode, channel lockout function on all channels, automatically defaults to correct mode and step for each band from built in reference table with manual override for mode & frequency steps if desired. Turbo scan for up to 300 channels per second search and 100 channels per second scan rate. Illuminated LCD, signal attenuator, data skip function, keyboard lock, send and auto functions and more. Comes with heavy duty carry case, 600mAh slide-off/on rechargable NiCd battery pack and charger, shakeproof belt attachment and radio retaining strap, flexible antenna, full instructions.



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Super Wide Band Communications Receiver

FEATURES: 0.1 to 2000MHz - all mode capacity - AM,FMN, FMW, SSB, CW - and optional TV adaptor. 1000 memories divided into 20 banks of 40 channels, 100ch of auto memory & 100 skip channels plus 10 search groups and alpha-numeric assignments for channels and memory banks. RS-232 computer interface. Frequencies tunable in steps from 10Hz through 50Hz, 100Hz to 1, 2.5, 5, 9, 10, 12.5, 20, 25, 100kHz & 1MHz or user programmable between 0.5 and 199.5kHz. Call for details.

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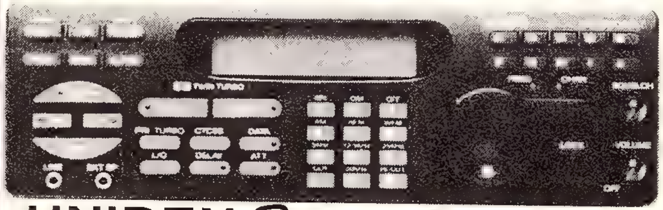
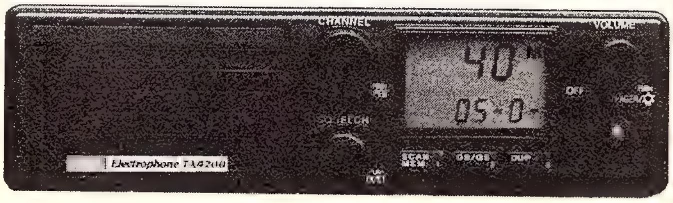


UNIDEN *Bearcat* 9000XLT

All the features of the 3000XLT(see above) plus Alphanumeric display, 100 more memories, VFO control operates on frequency steps or can be used to manually search through memory banks, selectable mode & frequency steps, automatic memory store, external speaker and line record level audio outputs, CTCSS decoder option for selective reception of group communications. See ARA April '95 for full review.

$539 **Plus $15 P&P**

GME TX-4200 UHF CRS Transceiver



THE NEW GENERATION... Brand New Design with full control over all five SELCAL digits plus digital signal strength meter along with all the usual performance features like dual scan groups, pager facility, front mounted speaker, compact with 'flying leads' & lots more.

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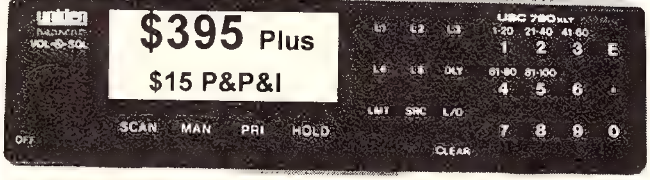
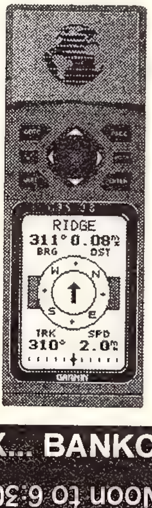
Plus The Full Range Of UNIDEN Scanners & UHF & 27MHz CB Radio Transceivers



$395 Plus
$15 P&P&I

UNIDEN 760XLT - Designed to GO MOBILE

10 bands, 5 search groups, 100 memories in 10 banks plus all the usual features including mounting bracket & power lead.



GARMIN GPS-38/45XL

Serious Navigation Made Easy

A pair of low cost, compact, precision, go anywhere navigators that can steer you safely from one remote destination to another powered by internal batteries or outboard supply. Heaps of user friendly features including GOTO compass needle that always points to selected (up to 250 programmed) destinations. Available with gimbled mounting hardware and power/data cable interface for computer control. Heaps of features. Call for brochure. GPS-38 with full GME one year warranty & GPS-45 with two year warranty. Inert gas filled case. External antennas available for new improved GPS-45XL model. The absolute best performer, hand-held GPS we've seen anywhere near the price range.

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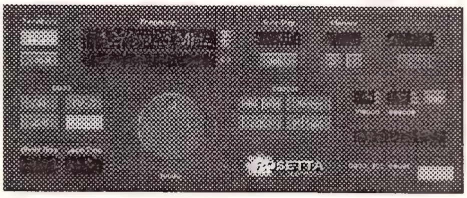
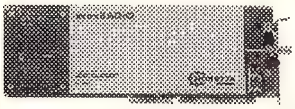
WiNRADiO is a revolutionary new concept in receiver hardware technology that turns your PC into a wide band scanner with almost unlimited control through the use of a custom designed, user friendly, WINDOWS software package. Here's how the *control panel* will appear on your PC screen:





And here is the *plug-in module* that makes it all happen from 500kHz to 1300MHz with continuous coverage for AM, FMN, FMW, CW & SSB. Simply plug-in to a 16bit card slot, insert software disk and type 'install'. **$695 inc P&P**

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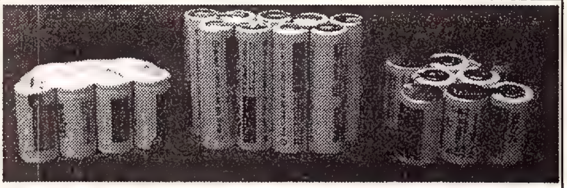
To enhance the WiNRADiO wide band communications receiver module ROSETTA LABORATORIES have released an up-to-date frequency data base containing over 300,000 records of short wave and utility stations world wide. The data base comes complete with a comprehensive management program that allows editing of existing entries and addition of new entries and removal of unwanted entries. Search by frequency, country, name, callsign & much more. **$295 inc P&P**

"HEY... That's Cool
Now I Can Buy IC-40GX Optioned the way I WANT."

Arguably the best UHF CB portable available in Australia today and now available in the *scatterpack* configuration **YOU** want. Here's how it works.

If you only want the transceiver and maybe a dry cell battery case... then that's all you have to buy. You can go rechargeable later when you are ready... and save now. That's right. Just order the modules you want. Transceiver module includes antenna, belt clip & carry cord. Call for details. Features:- 5-tone SELCAL, Repeaters, Scanning, Mems., keyboard lock, operates direct from 13.8Vdc etc. etc.. Most compact UHF CB. **Available Now.**



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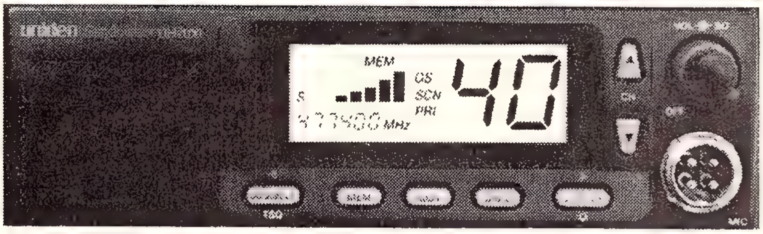
NiCd battery packs need not be discarded. Many models can be refurbished withfresh, reliable, high capacity cells to bring new life at a fraction of the cost of battery pack replacement - some with higher capacity than the original pack. We use only SANYO CADNICA high capacity cells for long life and reliability - Beware of 'cheap' rebuilds using inferior cells - they may cost more after all. POPULAR REBUILDS.... UNIDEN 100XLT, 200XLT, 70XLT scanners and UH-005, UH-055 UHF CB hand helds. Electrophone TX-475 and 474 UHF CB hand helds, Pearce Simpson & Emtron UHF CB hand helds, Icom battery packs...BP2, BP3, BP5, BP7, BP8, CM96 etc. BP8 packs rebuilt to CM96 specs. COD return service available. For any of the above packs just mail to us and your refurbished pack will sent by return mail. Call for details.

UNIDEN 'Scrambles' UHF with the new... UH-100

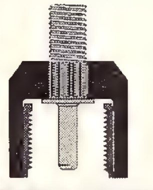


Uniden breaks new ground with the introduction of speech scrambling as a standard feature in the brand new UH-100 UHF CB. Other features include:- NEW compact size, fully programmable 5-tone SELCAL, huge LCD channel frequency display, distinctive signal bargraph display, 2 programmable scan groups, huge channel display characters with back lighting, flying leads for power and antenna connections plus comprehensive operators manual.

IN STOCK NOW at a very appealing price.

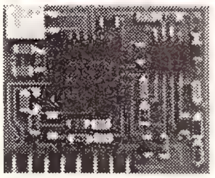
SEE REVIEW LAST ISSUE FOR FULL DETAILS.

Convert Your SO-239 to accept standard whips.



SA Adaptor screws firmly onto your UHF coaxial antenna mount instantly converting it to the standard 5/16" CB antenna thread. Very strong adaptor.
$12 plus $3 P&P

GME TX-4200
SCRAMBLER MODULE NOW AVAILABLE



Electrophone's new ASP sub-minature encryption module to suit only the new TX-4200 UHF CRS transceiver is now available for retro fitting to your existing rig or available as a pre delivery option for new sets. The module allows for 32 individual fixed codes on a 5-bit bus and CAN be used in conjunction with internal SELCAL. Mail order too.

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Emergency Services round-up

Continuing on with our series on the Emergency Services update across Australia, this month we take a look at the services looking after **New South Wales**.

The information contained in this article has been compiled from a number of publicly-available resources including the FidoNet BBS community, the internet and the SMA AFAD CD-ROM. This information is published for the purposes of recreational listening only and no other.

Let's kick off with the Police...

NSW Police

The NSW police radio network is massive, with millions of dollars worth of communications hardware in place providing a blanket state-wide coverage. As with the other states, the NSW force also utilises the nationally-allocated 64 channels in the UHF band for the majority of its communications.

467.850	**Ch 1**	J Division
467.875	**Ch 2**	Criminal Investigation Branch
467.900	**Ch 3**	E Division
467.925	**Ch 4**	Sporting event channel 2
467.950	**Ch 5**	E Division
467.975	**Ch 6**	Talk around channel
468.000	**Ch 7**	G Division
468.025	**Ch 8**	J Division
468.050	**Ch 9**	VHF cross-band state-wide
468.075	**Ch 10**	E Division
468.100	**Ch 11**	Sport & special event channel 1
468.125	**Ch 12**	H Division
468.150	**Ch 13**	B Div, Gosford and Sth Coast
468.175	**Ch 14**	B Division
468.200	**Ch 15**	D Division
468.225	**Ch 16**	L Division
468.250	**Ch 17**	K Division
468.275	**Ch 18**	BCI
468.300	**Ch 19**	State-wide back channel
468.325	**Ch 20**	B Division and South Coast
468.350	**Ch 21**	J Division
468.375	**Ch 22**	I Division
468.400	**Ch 23**	A Division
468.425	**Ch 24**	H Division
468.450	**Ch 25**	D Division
468.475	**Ch 26**	Special Ops (tactical channel)
468.500	**Ch 27**	L Division
468.525	**Ch 28**	C Division
468.550	**Ch 29**	I Division
468.575	**Ch 30**	Tamworth cross-banding
468.600	**Ch 31**	State Emergency Service Ch 1
468.625	**Ch 32**	State Emergency Service Ch 2
468.650	**Ch 33**	State Emergency Service Ch 3
468.675	**Ch 34**	H Division
468.700	**Ch 35**	G Division
468.725	**Ch 36**	E Division
468.750	**Ch 37**	F & M Division
468.775	**Ch 38**	State-wide back channel
468.800	**Ch 39**	B Division and South Coast
468.825	**Ch 40**	L Division
468.850	**Ch 41**	J Division Special Operations
468.875	**Ch 42**	B Division
468.900	**Ch 43**	J Division
468.925	**Ch 44**	D Division
468.950	**Ch 45**	C Division
468.975	**Ch 46**	Milton & Ulladulla
469.000	**Ch 47**	
469.025	**Ch 48**	Newcastle
469.050	**Ch 49**	Water Police
469.075	**Ch 50**	I Division
469.100	**Ch 51**	VHF cross-band state-wide
469.125	**Ch 52**	State-wide back channel
469.150	**Ch 53**	C Division
469.175	**Ch 54**	Tactical Response Group
469.200	**Ch 55**	B Division
469.225	**Ch 56**	J Division
469.250	**Ch 57**	
469.275	**Ch 58**	H Division
469.300	**Ch 59**	E Division
469.325	**Ch 60**	D Division
469.350	**Ch 61**	B Division
469.375	**Ch 62**	K Division
469.400	**Ch 63**	B Division and South Coast
469.425	**Ch 64**	
469.825	**Ch 65**	State-wide portables (low pwr)
468.400	**Ch 66**	A Division talk around channel
468.150	**Ch 67**	Wollongong talk around ch.
468.525	**Ch 68**	C Division talk around ch.
468.450	**Ch 69**	D Division talk around channel
468.725	**Ch 70**	E Division talk around channel
468.700	**Ch 71**	G Division talk around channel
468.500	**Ch 72**	L Division talk around channel
468.425	**Ch 73**	H Division talk around channel
468.550	**Ch 74**	I Division talk around channel
468.350	**Ch 75**	J Division talk around channel
468.575	**Ch 76**	
Vote	**Ch 77**	Wollongong voting 63, 13, 20 & 39
Vote	**Ch 78**	C Division voting plan on 28 & 45
Vote	**Ch 79**	D Division voting 25, 44, 15 & 60
Vote	**Ch 80**	E Division voting 36, 5, 10, 3 & 59
Vote	**Ch 81**	G Division voting plan on 35 & 7
Vote	**Ch 82**	L Division voting on 27, 16 & 40
Vote	**Ch 83**	H Division voting 24, 46, 34 & 58
Vote	**Ch 84**	I Division voting on 29, 22 & 50
Vote	**Ch 85**	J Division voting 21, 43, 8 & 56
Vote	**Ch 86**	K Division voting plan on 17 & 62
Vote	**Ch 87**	B Division voting 61, 42, 55 & 14
468.250	**Ch 89**	K Division talk-around
469.350	**Ch 90**	B Division talk around
469.050	**Ch 91**	
469.150	**Ch 92**	Queanbeyan talk around
468.750	**Ch 93**	F & M Division talk around
469.425	**Ch 94**	

You will notice the term 'Vote' or 'Voting'. This is a means by which radios in police vehicles and portable units automatically scan a pre-programmed group of channels to locate the strongest possible signal at all times. By voting, a radio's effective coverage can be increased dramatically without the need for the person with the radio having to change channels. The intelligence is all within the radio and does all the automatic scanning when the radio is changed to a Voting Channel. So if you hear them call for a change to channel 84 for example, set your scanner to listen to either Channel 29, 22 or 50 to hear the action.

The NSW Air Wing, known as 'PolAir', can be heard on the airband channel of 131.600 MHz, and it can also communicate on the UHF channels if needed.

NSW Police districts

The Sydney Police 'Beat' is divided up into different divisions, each one serviced by members from their home stations. The divisions are:

A Division
Sydney Centre
Darlinghurst
Kings Cross
Phillip Street
Pyrmont
Redfern
Regent Street

B Division
Ettalong
Gosford
Terrigal
The Entrance
Toukley
Woy Woy
Wyong

C Division
Bondi
Botany
Daceyville
Malabar
Paddington
Randwick
Rose Bay
Vaucluse
Waverley

D Division
Avalon
Collaroy
Dee Why
Forestville
Frenchs Forest
Manly
Mona Vale
Mosman
Neutral Bay
North Sydney

E Division
Berowra
Brooklyn
Beecroft
Chatswood
Eastwood
Gladesville
Hornsby
Lane Cove
Pymble

F Division
Annandale
Ashfield
Balmain
Belmore
Burwood
Campsie
Canterbury
Drummoyne
Earlwood
Enfield
Five Dock
Glebe
Haberfield
Hurlstone Park
Lakemba
Leichhardt
Marrickville
Newtown
Petersham
Punchbowl

G Division
Bankstown
Bass Hill
Chester Hill
Cronulla
Engadine
Hurstville
Kingsgrove
Kogarah
Kurnell
Loftus
Miranda
Mortdale
Peakhurst
Revesby
Riverwood
Rockdale

H Division
Auburn
Baulkham Hills
Castle Hill
Flemington
Granville
Guilford
Lidcombe
Merrylands
Parramatta
Richmond
Strathfield
Toongabbie
Windsor
Wiseman Ferry

I Division
Cabramatta
Camden
Campbelltown
Fairfield
Green Valley
Ingleburn
Liverpool
Picton
The Oakes

J Division
Blackheath
Blacktown
Katoomba
Lawson
Mount Druitt
Mount Victoria
Pennant Hills
Penrith
Riverstone
Rooty Hill
Seven Hills
Springwood
Saint Marys
Warragamba
Wentworth Falls
Wentworthville

The NSW Water Police can also be found on the VHF Marine channels from time to time, so keep these ones handy when around the waterways: 156.375, 156.400, 156.525, 156.600, 156.650, 156.675, 156.700, 156.800 and 156.875 MHz.

The Police units involved in special tasks such as Drug Enforcement Agency, the State Protection Group and others can pop up on numerous channels, some of which are not published here. They use encryption most of the time for those special tasks we are not supposed to hear (for example, the visit by US President Bill Clinton).

Emergency services on trunking

The NSW Government, like others, has gone down the path of setting up its own trunking radio network for use by various government instrumentalities.

The **State Emergency Service** is known to be amongst the users which have access, along with the **NSW Bush Fire Brigades** and the **State Police**. Try these:
415.6250, 415.6375, 415.6750, 415.6875, 415.7500, 415.7625, 415.7875, 415.8000, 415.8750, 415.8875, 415.9125, 415.9250, 415.9500, 415.9625, 415.9750, 415.9875, 416.0000, 416.0125, 416.0375, 416.1250, 416.1375, 416.1750, 416.1875, 416.2500, 416.2625, 416.2875, 416.3000, 416.3750, 416.3875, 416.4125, 416.4250, 416.4500, 416.4625, 416.4750, 416.4875, 416.5000, 416.5125, 416.5375, 416.6250, 416.6375, 416.6750, 416.6875, 416.7500, 416.7625, 416.7875, 416.8000, 416.8750, 416.8875, 416.9125, 416.9250, 416.9500, 416.9625, 416.9750, 416.9875, 417.0000, 417.0125, 417.0375, 417.1250, 417.1375, 417.1750, 417.1875, 417.2500, 417.2625, 417.2875, 417.3000, 417.3750, 417.3875, 417.4125, 417.4250, 417.4500, 417.4625, 417.4750, 417.4875, 417.5000, 417.5125, 417.5375, 417.6250, 417.6375, 417.6750, 417.6875, 417.7500, 417.7625, 417.7875, 417.8000, 417.8750, 417.8875, 417.9125, 417.9250, 417.9500, 417.9625, 417.9750, 417.9875, 418.0000, 418.0125 and 418.0375 MHz.

The interesting thing about the SES is that it has actually been allocated frequencies within that trunking band, yet it is also licensed to the NSW Government trunking system. It could be that it has priority access to those frequencies over other government or commercial users of the system.

Trunking can be a difficult thing to monitor, especially with a network of the size that this one clearly is. If the traffic on it is significant, it can be made so much more difficult, as the channels being used chop and change with each conversation, but if you program all of the above in your 12.5 kHz-capable scanner, and remember to remove the DELAY function on each of the above channels, then you will stand a better chance of being able to track a conversation.

Ambulance Service

The **New South Wales Health Department** Ambulance radio network is very extensive. It utilises HF frequencies right through to UHF for their communications. Try dialling up these:
3.7415, 4.9515, 7.5975, 75.8000, 76.5800, 76.6400, 76.6700, 76.7000, 76.7300, 76.7750, 76.7900, 76.8050, 76.8200, 76.9400, 77.4350, 78.6625, 79.0125, 79.0250, 79.0375, 79.0500, 79.0625, 79.6875, 79.7125, 79.7250, 79.7625, 79.9750, 132.750, 149.375, 149.400, 149.425, 463.050, 463.575, 463.650, 463.700, 463.875, 463.925, 464.075, 465.100, 465.275, 465.875, 466.175, 466.925, 467.675 and 468.625 MHz.

Thanks to Craig Pilkington in NSW, here are the NSW Ambulance codes commonly used:

Code 1	Ambulance crew in trouble. Police assistance needed urgently
Code 2	Cardiac arrest
Code 3	Notify A&E re inward patient condition
Code 4	Patient dead on arrival, Police notified
Code 5	At hospital for DOA certification
Code 6	Departing hospital for morgue
Code 7	Arrive at morgue
Code 8	Prefix for terminal cases
Code 9	Rescue Unit required
Code 10	Fire Brigade required
Code 11	Live power lines down
Code 12	Poisonous gas at scene
Code 13	Danger of explosion at scene
Code 14	Ambulance involved in collision
Code 15	Patient or Ambo officers injured
Code 16	Tow truck required
Code 17	Drug overdose
Code 18	Airport alert
Code 19	Scene declared a disaster area
Code 20	Officer taking meal break

State Emergency Service

The **New South Wales State Emergency Service** also operates on numerous frequencies from HF through to UHF depending on the conditions and terrain at that particular time.

Like all of the other states, its two-way radio network is the key to its successful and safe operation. In times of disaster its radio network has to be operational no matter what the circumstances. With that in mind, it has multiple base stations with redundancy backup, failsafe power supplies and other fall-back facilities.

The SES is made up largely by unpaid volunteers who do it for the love of it and to serve their community. To keep an ear on what these people are doing, tune in to some of these:
2.5630, 2.5645, 2.5690, 2.5705, 2.5720, 2.5735, 2.5750, 2.5765, 3.7290, 3.7305, 3.7430, 3.7445, 4.5670, 4.5685, 7.3300, 7.3315, 119.100, 168.850, 171.330, 467.250, 468.600, 468.625 and 468.650 MHz.

Department of Bush Fire Services

Looking at the Spectrum Management Agency database on the NSW Bush Fire Brigade, it has an incredible radio network made up of the following main transmitter channels but linked together with hundreds of RF links in the 400, 800 and 900 MHz bands

I have not been able to find out much about channel assignments for the NSW Fire Service, despite lots of scrounging on BBSs and the Internet, so if you can offer some further information please drop me a line to michael@tbsa.com.au or PO Box 8054, Northland Centre, Victoria 3072

Anyway, start with these:
2.6615, 4.6465, 6.9415, 71.625, 73.95, 77.9125, 77.925, 78.2125, 78.2375, 78.25, 78.725, 78.7375, 78.8, 78.825, 78.8875, 78.9125, 78.925, 78.95, 78.9625, 78.975, 78.9875, 119.1, 160.21, 160.225, 167.17, 167.71, 168.79, 168.9, 170.97, 171.21, 171.93, 173.55, 173.64, 173.94, 463.1, 463.25, 463.65, 463.975, 464.275, 464.325, 464.375, 464.525, 464.6, 464.8, 465.75, 466.775, 467.325, 467.425, 467.45 and 467.725 MHz.

It also has access to the state-wide trunking network if needed; the exact band used will be determined geographically — what part of the state the operation is in — but you *will* find them on the above channels.

New South Wales Fire Service

Moving along now to the other area of the **New South Wales Fire Service** which takes care of the metropolitan areas...

Like other emergency services, it also uses a code system to speed up the day-to-day radio messages. Here is a short sample:

Yellow Message not emergency
White Report on unreported fire or incident
Blue Incident message
Green Incident stop message
Red Emergency message (RED RED RED)
Code 1 No sign of fire; investigating fire ground
Code 4 Minor fire; only one appliance is required
Code 7 Responding to fire call
Code 8 Appliance arrived at scene
Code 9 Available to respond
Code 10 Malicious false alarm
Code 11 False alarm
Code 14 Minor fire; has been extinguished

Most of the traffic takes place on VHF low-band frequencies, but you will also hear jobs on the other channels too:
78.0100, 78.0250, 78.0400, 78.0550, 78.0625, 78.0700, 78.0875, 78.1000, 78.1150, 78.1250, 78.1300, 78.1450, 78.1600, 119.100, 149.350, 149.400, 149.875, 154.550, 154.600 and 155.075 MHz.

There are some low power simplex frequencies also used, and these are:
Ch1 471.350; **Ch2** 471.525; **Ch3** 471.700; **Ch4** 471.725; **Ch5** 471.850

These are most likely used on the fire ground itself.

Well, that's about the lot for New South Wales. I trust you will find something of interest in amongst all of those for your listening pleasure.

If you do have any updates or more information to contribute, feel free to send it via the Internet to **michael@tbsa.com.au** or via snail mail to PO Box 8054, Northland Centre, Victoria 3072

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DX & BAND REPORT

Compiled by Jim Smith, VK9NS
PO Box 90, Norfolk Island,
South Pacific 2899

The one week visit to Pago Pago, American Samoa gave me a chance to use my US callsign WR1Z once again, this time signing portable KH8. I was not very active, but a daily sked with Kirsti, VK9NL helped me keep in touch. I was also able to work a few of the VKs around the same time slot.

Whilst visiting Larry, KS6DV we were able to get a bit of antenna work done at his QTH (which, incidentally, had me up his 80 foot tower three times. Talk about a busman's holiday!). I was also able to try out his new Yaesu FT-1000MP transceiver with its high-tech DSP plus dozens of other very up-to-date features — this is quite a rig. Larry also has a good antenna system with monoband beams and a substantial linear. I now know why his signal is so potent!

On the way to American Samoa I also met Phil, 5W1AU who kindly came out to the airport in Apia, Western Samoa to meet me. He drove me back into town as I had to overnight before leaving for Pago Pago the next morning. It was nice to meet old friends and we both agreed that neither of us looked a day older — that's what friends are for!! The bad news was that my suitcase was not aboard and I finally got it (badly damaged) some days later.

Meanwhile, on arrival back home there was the usual catching up to do with mail and so on, but I'm happy to say that things are more or less back to normal. My holiday antenna work inspired me to do a couple of things here, and my 160/80M vertical is now back in business. I'm trying to get things ready for the CQ WW Contest weekends.

Seasons Greetings

I will take this opportunity to wish you all the best for the coming festive season. Perhaps the best thing to make us all happy would be a final change in propagation conditions, but I have given up on the sunspot forecasting game. Latest news is 'not a sun spot in sight'. So a very merry Christmas and a happy and prosperous new year from us both and, of course, from the shack cat.

Myanmar, XZ

It now seems certain that the scheduled operation from Myanmar signing **XZ1N** is still 'all systems go'. This should give everyone a chance to get this country in their logs on several bands. Expect big signals and good operating from this team from the Central Arizona DX Association.

The operation was scheduled to start on November 18, with intended participation in the CQ WW CW Weekend of November 23-24.

QSL Route: **W1XT**

Tonga, A35

I spoke to Paul, **KK6H** who has recently moved to Ha'Pai Island in Tonga and is now active as **A35RK**. He is gradually getting his new home and station together. At the moment Bob, **W7TSQ** is visiting Paul and assisting with antenna work etc. Bob, who signs **A35SQ**, will be active during the CQWW SSB weekend.

QSL Route for A35SQ: **W7TSQ**, direct or via the W7 bureau.

Sable Island, CY0

There have been some last minute updates on this planned Sable Island DXpedition, with the operators signing home calls /CY0. Four stations will be active during normal operations and activity is planned on all bands and modes.

The group was active from October 22 to 29 and operated multi/single during the CQWW contest weekend using the callsign **CY0XX**.

Operators included Murray, WA4DAN; Will, AA4NC; Craig, AH9B; Atsu, VK2BEX; and Ken, V73C.

QSL Route: **WA4DAN** CBA

Uganda, 5X

Gus, **SM5DIC**, who has been very active as **5X1D**, will be QRT by the time you read this, but it is reported that **SM5KOJ** will replace him. No callsign is given.

DX & BAND REPORT

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5X1B is also active once again and he is in Arua.
QSL Route for **5X1B**: **K3SW**

Note: The Uganda Amateur Radio Society (UARS) has a new address:
Uganda Amateur Radio Society,
PO Box 22761,
Kampala,
Uganda.

Nepal, 9N

I worked Dick, **9N1ARB** on 20M SSB at 0128 the other day. He is often on the band with Denver, **4S7DA** and others around 14,214 kHz starting about 0030 UTC. They have problems with commercial SSB QRM perhaps from Taiwanese fishing vessels.

Also Jack, **W4SON** should be active until the end of November signing **9N1SON** from Kathmandu and other areas of Nepal. He will use a solar-powered Ten-Tec rig on 80, 40, 20 and 15M.
QSL Route for **9N1SON**: **W4SON** CBA

Republic of Belau, T8

It seems that it is now official that the prefix T8 has been assigned to Belau. **T88T** was worked from here the other day on 20M CW. It was reported that **T88A** had also been issued to Paul, LX2AA.
QSL Route: No info right now.

Svalbard, JW

Ula, **JW8GV** is in Longyear, Svalbard for the next (long) year or so, and hopes to be very active as winter sets in. She runs 600 watts into a beam and various wire antennas.
QSL Route for JW8GV: **LA8GV**

Swaziland, 3DA0NX

Koji, **JM1CAX** hopes to be active during the CQ WW SSB contest from Swaziland signing 3DA0NX. Koji is currently signing **ZS6CAX** and he is in South Africa on assignment from Japan with Embassy staff.
QSL Route:
K Tahara, ZS6CAX, Japan Embassy, PO Box 11434, Brooklyn 0011, Republic of South Africa.

Note: Bureau cards go to his JA call, JM1CAX, via JARL.

Ghana, 9G

It is reported that Werner, **9G1UW** has been very active on RTTY on both 15 and 20M.
QSL Route: **DL8UP**
Note: David, WA0UOX notes that cards for **9G1SD** should be sent to him. N0NLP is *not* the manager.

Angola, D2

Alex, **PA3DZN** has now been issued with **D25L** but it will take a few weeks before he is fully active. As I write this, his equipment is due to arrive soon.
QSL Route: **PA3DMH**

PA3DMH will also QSL for the **9X5EE** operation by Alex, PA3DZN. He will continue to QSL for the T9/PA3DZN, 9Q2L, 9R1A which were operations by Alex, PA3DZN.

Saint Martin, FS

Paul, **WX9E** will sign **FS/WX9E** and Mike, **N0BSH** will sign **FS/N0BSH** prior to the CQWW SSB contest weekend. During the contest weekend they will sign **FS5PL**.
QSL Routes: to home calls WX9E and N0BSH; FS5PL for the contest weekend only: **WX9E**

Guinea Bissau, J5

Good news is that Dave, **KC9IM** is now in J5, Guinea Bissau for the next couple of years and is now licensed as **J25IM**. Dave has held several previous calls and he likes the low bands, so expect activity on 160 and 80M.
QSL Route: **KB9XN**

Syria, YK

The expected operation from YK, Syria by a multi-member German team has been cancelled. They apparently understood that they had the permission to use **YK0B** but the permission was withdrawn at the last minute.

Clipperton, FO0C

I recently mentioned the possibility of an operation from Clipperton in the coming year. It seems that plans are going ahead and a four or five member team is trying for April 1997. Keep your fingers crossed...

Midway, KH4

Midway is active once again, and I worked **KH4/N1VXT** on 30M CW this morning with a very good signal.
QSL Route: **JA3IG**

Pratas and Spratly, BV

There has been some input by **BV5AF** (President of CTARL) with respect to future activity from Pratas and Scarborough.

It looks as thought there are plans for a DXpedition to Pratas in early 1997. Also mentioned is activity from Equal Island, which is in the Spratly Group. This island is under the jurisdiction of ROC Taiwan.

Maldives, 8Q7

The Maldives have been available with the operation by Salvatore, **8Q7BU**; Sonke, **8Q7LS** and Heinz, **8Q7AI**.

I worked Heinz, **8Q7AI** on 40M CW and he had a strong signal with quite a pile up.
QSL Routes:
8Q7BU: DD5BU
8Q7LS: DG6LS
8Q7AI: DL9LAI.

It is also reported that **EA3BT** will sign **8Q7BT** and wife Nuria **EA3AOK** will sign **8Q7OK** and hope to be active during the CQWW SSB contest. They plan to be very active on RTTY outside the contest.
QSL Route for 8Q7BT and 8Q7OK: **EA3BT**

Crete, SV9

Walt, **SV9/G3NYY** was a tremendous signal on 80M CW the other morning at 1850 UTC. He was easily worked from here but had few takers.
QSL Route: **G3NYY** home call. Direct or via bureau.

Tunisia, 3V8

Uli, **DL2HBX** is planning to active the club station, **3V8BB**, as a single op all-band entry for the CQWW CW DX Contest during the weekend of November 23 and 24. He will also be active before and during the contest.
QSL Route: (for this 3V8BB operation only): **DL2HBX**

Jamboree of the Air — JOTA

It was good to hear the high level of activity during the JOTA weekend of October 19-20. There were many good signals and all seemed to be enjoying themselves.

....☞

This hi-tech world...

I was asked to relay a message on 20M SSB the other day from VE7-land to VK6-land. The message? "Please ask Mal if he received my email message sent a few day ago." Now that's what I call progress!

Malagasy, 5R8

Mike, **5R8EE** is reported to be quite active and it is good to have this DXCC country available. Gerard, **5R8JD** has also been very active in recent months with very fast QSLing from F6AJA. Gerard will be QRT by the time you read this.

QSL Route for 5R8EE: Mike, 5R8EE, PO Box 1004, Toamasina 501, Mala, Malagasy.

Andaman, VU

They say the road to hell is paved with good intentions. Well it is certainly 'hell' at the moment as HIDXA strives to get a modicum of sense out of New Delhi. The donation of equipment to Mani in Port Blair remains in limbo in New Delhi with Customs desiring to *fine* us for an allegedly illegal import!! This is despite our having the WPC Import Certificate issued in February 1996.

16,000 Rupees ($600) was paid by HIDXA to an account in New Delhi to cover possible Duty charges (the permit recommends that duty be waived since the items were used) and the onward charge to Port Blair. The numerous faxes, telephone calls etc have so far been unable to unlock the mysteries of business in the International Airport of New Delhi.

Hang in there... life is not meant to be easy.

QSLing

The never-ending saga moves on. I wonder why it is that so many VK stations use those terrible envelopes which are so small as to be insignificant. As we all know, our mail charges are pretty high so why not resolve to buy a slightly larger envelope just to get your postal value. There are several preferred sizes in the postal range and even a moderate step up will not bust the bank.

The envelope may well be okay for your own card — after all you have probably chosen its dimensions to suit. However, it's at the *other* end that problems arise.

QSL cards still come to me with no SAE and no return postage. It is hard to decide what to do — put them in the VK bureau system? It will cost me 45 cents plus an envelope to do so.

Many cards coming here have an SAE with an Australian stamp attached. Of course this is understandable if you know nothing about Norfolk Island. We have our *own* postage system and stamps as, of course, the island Administration pays for the transportation of every bit of mail on and off the island.

Our Postal staff have long ago come to terms with me, but dislike those envelopes with Australian stamps. Please do not stick the stamp on the envelope — that way we can do a trade and I will substitute a Norfolk stamp. (In actual fact, all mail carrying Australian stamps should be mailed to the mainland under separate cover to be re-mailed there.)

Japan pre-paid mail

A recent QSL twist has come out of Japan in the shape of the SAE being a pre-paid envelope. The envelope states that postage has been paid and so no postage is required if mailed to Japan.

"Not so!" says our post office. Once again this takes revenue away and, although it seems like nit-picking, Norfolk Island would carry the postal charge with no return.

So where do the envelopes come from?? The well-known *59 Magazine* run by Toshi, JA1ELY, supplies these to DXers but I have no idea what they cost.

My understanding on the international mail system is that we have a thing called the IRC (International Reply Coupon) which was recently rationalised to specifically cover Air Mail postage.

Gone are the days where the Call Book listed the number of IRCs to be sent to location X and Y. I would be interested in hearing whether your Post Office accepts these JA prepaid envelopes.

American Samoa, KH8

It was by pure chance that I met several members of the Yamato ARC whilst I was in Pago Pago. They had been on a DXpedition to another island in the KH8 group and were on their way back home.

Larry, KS6DV kindly invited them back to his place to help pass 'in between flights' time. A great time was had by all and they were a cheery bunch. They had experienced very poor band conditions during their stay.

The eight members of the group were: Shigeo Matsu, JA1JQY; Kunio Saito, JA8VE; Hishashi Nakayama, JA1KJW; Seeichi Aruga, JA0KNM; Kaoru Tachibana, JA3MCA; Kashwaga Hisayoshi, JR1LVB; Shoji Fukusato, JA6SJN / JD1BIK; and Hiroshi Sugizaki, 7L3MNH.

They try to go to some DX spot each year and, for example, have been to Rotuma, Fiji etc.

Antarctica, EM

As we know **EM1KA** has been very active recently and is often on the ANZA Net etc. The QSL route which was 9H1UP is now apparently JA2JPA. See Notes below.

QSL Route for EM1KA:
Takashi Ajiro, JA2JPA,
2-14-18 Doubayashi,
Shimizu,
Shizuoka 424,
Japan.

Note: it appears that Roy Rogers, 9H3UP is actually Romeo Stepanko and as a result ARRL DXCC will not accept EM1KA cards processed by him after August 23, 1996. As mentioned in the column some time ago, ARRL DXCC has barred Romeo from any further activity in the DXCC program.

It is reported that JA2JPA has the EM1KA logs and those cards will be okay at DXCC.

Sierra Leone, 9L

Paul, **9L1PG** and Millie, **9L1MG** are now QRT and back home in the USA.

QSL Route for both: NW5F

Tadjikistan, EY

There is plenty of activity at the moment from EY, Tadjikistan with Nodir, EY8MM; Alex, EY8CQ: Irage, EY8WW; Vlad, EY8XX; Vlad, EY5VV and Bruce, EY8RR (AA3DK) all active. They hope to be signing EY2Q during CQ WW SSB weekend.

So that is about it for this issue. We are working against shrinking deadlines to cover the festive season. However, despite the conditions, I'm usually on the bands daily and always find 40M interesting in the mornings. Incidentally, 17M is also very good also in my early mornings with good openings to the East Coast USA.

To the many who keep me informed many thanks for your continuing support over the last 12 months.

A special thanks is due to the various DX outlets which keep the DXer informed on a weekly basis. In particular thanks to: The RSGB DX Newsheet, QRZ DX, Inside DX, ARRL DXCC Desk, Les Nouvelles DX, Funkamateur, Radio Vista and more.

73 de Jim, VK9NS

ISLANDS ON THE AIR (IOTA)

By Jim Smith, VK9NS

By all accounts, the recent RSGB International HF and IOTA Convention was a great success. I can hardly believe that 12 months have passed since I attended the same Convention last year. Time flies…

In a recent mail I received a copy of the new **1997 RSGB IOTA Directory and Yearbook**. First impressions are certainly very good with a glossy cover with nice colour pictures on the front and an advert for the Yaesu FT-1000MP on the back (to help pay for the printing).

There are 96 pages of information inside, printed on top-quality paper with a clear and easily readable text. The main part of the directory remains the same, with a geographical listing of all island areas, co-ordinates, prefixes etc. However, the directory has been updated to include all island numbers issued since the last printing of the directory a couple of years ago. For example, the last island numbers listed are now:

Europe	EU-169	ZA	Sazan
Africa	AF-075	5H	Boydu
Antarctica	AN-018	VP	Alexander Island
Asia	AS-124	A6	Sirat al Khwar
North America	NA-208	VE8	Avataqpivik
Oceania	OC-216	VK9	Ashmore
South America	SA-084	HK4	Playa Blanca

Needless to say, other new numbers have been issued since the directory went to print, but it is very current nevertheless.

The name of the publication includes the words Yearbook and the RSGB has copied the idea from the DXCC Annual Listings in its Year Book. I think it is a great idea to list the IOTA participants with their current annual listings for the year 1996. Members of the RSGB will already have seen these in RADCOM of July 1996 but this listing is now available to anyone buying the directory. The IOTA Honor Roll dated April 1996 has some 860 stations listed and includes VK, ZL and JA, by the way.

Like the ARRL DXCC Year Book, it is good to browse through the IOTA listings and to know so many of the callsigns heard whilst chasing islands. As mentioned before, it is nice to see a gradual increase of VK and ZL participants appearing in print. As band conditions improve, many of the IOTA totals will increase dramatically. Certainly in recent months several of the 'new ones' have just been impossible to work from here despite a great deal of effort to do so.

The IOTA Directory/Yearbook has many interesting sections and there are stories from the HF-DX and IOTA Convention, held in 1995 in Bologna. Stories from the Tokyo Ham Fair, 1995 and the Russian IOTA HamVention 1995 and 1996. The Friedrichshafen HamRadio 1996 Get Together also gets a mention, as do several other functions. There are several pictures and some stories of what it was like to activate some of these islands.

Where is the IOTA program today? Well, from a hands-on position, here on Norfolk Island the program goes from strength to strength. Despite poor propagation and band conditions, amateurs are still motivated to activate islands whether they are already listed or better still if the activity is to become the latest addition to the IOTA Islands List.

It is quite incredible when one notes that some 185 calls appear showing major island activity since January 1995. It shows a substantial interest by many radio amateurs in their attempt to further the IOTA program by making these island available. This in some ways goes towards a gradual reduction of the gap between the IOTA old-timers and the more recent IOTA chasers.

It is very much like DXCC. It is only a few years since there was a tremendous gap between the old-timer DXer who had Burma, Albania, China and the like confirmed, whereas the relative newcomer to DXing could simply not work these countries because they were no longer available on the bands.

In just the same way, in the IOTA program, many of those at the top have worked islands which have not been active for many years. However, as stated, gradually many of these rarer islands have been activated once again. In addition there are the continued attempts at activate those 'un-numbered islands'.

Most wanted islands

I liked the IOTA Wanted List section which shows very clearly that many of the islands have been worked by a tiny percentage of the IOTA group.

For example, there are almost 120 islands where less than 10 per cent of the IOTA group has worked the island. It is this sort of situation that really makes it hard to catch up with those at the top. It is interesting to note that over 50 of these islands are in Oceania. So there is no doubt that the Pacific remains a tough area from Europe, and in this respect we are very lucky in this part of the world.

How to get the RSGB IOTA Directory and Year Book: For non-members of the RSGB the cost of the Directory is $US13 plus $US3 for air mail postage.

You can order it from HIDXA (PO Box 90, Norfolk Island, NSW 2899) paying in the equivalent Australian or NZ dollars. I then fax the RSGB with the order, and the directory is on its way to you.

Alternatively, you can order it direct by writing to:

The RSGB IOTA Program,
PO Box 9,
Potters Bar,
Herts EN6 3RH,
England.

The RSGB can accept most usual credit cards, so this is a handy way to order.

Meanwhile here is some of the recent IOTA activity:

AN-005	VK0WH	Macquarie	QSL VK9NS CBA
AS-013	8Q7AI	Maldives	QSL DL9LAI
AS-015	9M2TO	Penang Island	QSL direct see below or via buro JA0DMV
AS-018	UA0FM	Sakhalin Island	QSL CBA
EU-015	SV9/G3NYY	Crete	QSL G3NYY
EU-026	JW8GV	Svalbard	QSL LA8GV
NA-105	FS5PL	Saint Martin	QSL CBA
OC-006	VK7BC	Tasmania	QSL Buro or direct.
OC-009	T88T	Palau Island	QSL no info yet.
OC-030	KH4/N1VXT	Midway	QSL JA3IG
OC-045	KS6DV	Tutuila	QSL CBA
OC-045	WR1Z/KH8	Tutuila	QSL VK9NS CBA
OC-045	AH8A	Tutuila	QSL see QSL info.
OC-059	V63AS	Kosrae	QSL JA3JA
OC-152	FO0SUC	Tubuai Island	QSL F5JJW
OC-169	A35SQ	Ha'Apai	QSL W7TSQ

New IOTA number

Cape Province - South Coast Group little letter (d)

Add the following number.

AF-077	ZS23I	Seal Island	QSL ZS1FJ

QSL info

9M2TO Terutsugu Izumo, Bukit Dumbar Apt 9-4, Jalan Thomas, 11700 Gelugor, Penang Island, Malaysia.

AH8A Wm E Faulkner, PO Box 2567, Pago Pago, American Samoa, AS 96799-2567, USA.

Season's Greeting to all the IOTA island hunters, and we can all expect plenty of activity on the CQWW weekends from many islands. Band conditions continue to be difficult and we can only hope for an improvement this coming year.

Happy island chasing and 73 all de Jim, VK9NS

HERE and THERE IN AMATEUR RADIO...

Yet another newspaper article appeared this week which warned of the perils of using a mobile telephone. Sending radio frequency energy into the ether only a centimetre or two from your brain may, some say, cause all sorts of health problems. Mobile phones produce quite complex waveforms, too, which might adversely affect nearby electronic equipment.

The article drew attention to two recent developments that make the radio frequency interference (RFI) issue worth revisiting. Both are related to the increasing use of the digital cellular telephone network.

Firstly, digital phones typically have a maximum transmit power of two watts, compared with a maximum of around 600 milliwatts for older analogue hand-held phones. The highest power outputs are not used all the time in either case, as the clever instruments continually vary their output power in response to signals from the network. And, of course, where the analogue phone transmits continually, its digital equivalent transmits data in bursts (which is why the digital's battery lasts much longer). Holding the antenna or forgetting to extend it fully will make the transmitter work harder and use more power to get the signal through.

The second point is that digital signals switch rapidly between high and low states. Analysis of square waves like those produced by digital circuits shows that they are a mixture of sine waves of different frequencies. Rapid switching produces more frequencies in the mixture, so stray emissions increase exponentially as the switching frequency increases.

The unwanted emissions from mobile phones are enough for hospitals to require visitors to switch them off. This is particularly important near intensive care units and areas where sensitive electronic equipment is used to monitor patients and help to keep them alive. A similar ban on the use of digital electronics, including mobile phones, laptop computers and CD players, extends to aircraft in flight. There is the potential here for interference with the instrument landing, satellite navigation and general communication systems. An additional problem is that an airborne cellular telephone 'sees' more network towers and can confuse the cellular system completely!

This issue set me thinking about our responsibilities as amateur radio and CB operators in the area of RFI. As holders of an amateur radio licence, at some point we passed the compulsory regulations examination, which tested amongst other things our knowledge of the rules about interference. The theory examination at each level has a section dealing with RFI, its causes, effects and cures. But how often do we revisit this issue, once we are proud possessors of the licence and get busy on the air?

For a start, here is a summary of the relevant section of the 'full call' syllabus, drawn from the Spectrum Management Agency's publications. It is worth keeping handy a copy of these distinctive blue and yellow booklets, called RIB70, RIB71 and RIB72, for ready reference in the shack. As a holder of the Amateur Operators Certificate of Proficiency (AOCP), you should know about:

- Transmitter defects, including definitions, causes, effects, location and suppression of interference caused by parasitic oscillations, harmonic radiation, self oscillation (instability), spurious outputs and overdriving (splattering), intermodulation products and key clicks.
- Interference to broadcast and television reception (BCI and TVI) and other domestic equipment, including:

Causes: front-end overload (including blocking), fundamental overload (AF/RF) and cross-modulation;
Remedies: stubs, filters (including toroids) and ferrite beads, chokes and by-pass capacitors;
Recognition of symptoms and precautions to avoid interference problems, including those generated by ancillary devices (eg SCR or Triacs); and
Interference due to re-radiation, external cross-modulation, causes, effects and cures.

- Filters and their applications — high-pass, low-pass, band-pass, coaxial (all types including cavity resonator) and stripline.

And under *safety*, we need to know about the safe use of high RF energy levels (including precautions at microwave frequencies).

Okay, hands up all those who can honestly say that they are up to speed on *that* lot! We need to be, however, because the regulations clearly state that as well as transmitting only within the designated band using only the specified modes, we must "...ensure that the emission mode in use does not i) cause interference to other primary/secondary radiocommunications services utilising the band(s); or ii) inhibit other amateur stations from using the bands...".

It is up to the amateur radio community to make sure that we all stick to the rules, as amateur radio is essentially self-regulating. There is often a fine distinction, however, between sticking to the rules and keeping the neighbours happy. You can be well within the band, operating well within power restrictions and sending a perfectly clean signal and *still* come up on next-door's hi-fi. The problem is that some domestic electronic systems are extremely susceptible to incoming RF at any frequency and in many cases at just about any power level.

Our collective responsibility, then, is first to make sure our transmissions are squeaky clean. Then, if complaints do arise, we need to know how to respond on both diplomatic and technical fronts. That is why it is so important to stay in touch with the theory on RFI and its treatment.

The American Radio Relay League's **ARRL Handbook** is very helpful on the topic of RFI, devoting a whole chapter to the issue. There is not room here to discuss every last detail, but an overview is valuable. The Handbook points out at the start that amateur radio is by no means the only source of RFI. So if the neighbours do spot your antenna and subsequently blame you for every glitch that appears on their television screen, your first response should be to establish a definite link between reported interference and your transmissions.

A well-kept log book is invaluable here, as it is then much easier to demonstrate that you were not on the air when the interference appeared. If it appears that you are not the culprit, it is still good for neighbourhood relations if you help out anyway with the detective work needed to find the true cause. You are then less likely to be blamed next time.

The theory surrounding RFI is quite straightforward, but reality is much more complex, as RFI does not always behave as the textbooks say it should. A good starting point is to separate the sending of radio waves from the interception of the transmission. Most RFI arises from poor design of home entertainment devices. As the Handbook says, "...The few small components or filters that would prevent RFI are often left out of otherwise well-designed products as manufacturers attempt to reduce costs, and hence to reduce the prices of their products...".

The first response to an RFI problem is usually to fit suitable filters at the transmitter end or in the equipment showing the problem. Most commonly, the particular part of the RF signal causing the problem is harmonically related to the main signal, so it will be at a frequency which is a simple multiple of the transmission frequency. A low-pass filter fitted at the transmitter end lets through the main signal but traps harmonics on higher frequencies, and this will often solve the problem.

It helps to be able to recognise the effects of various common types of RFI. The ARRL Handbook and other publications include photographs of television screens which are exhibiting cross-hatching, modulation bars and other forms of interference.

By Paul Butler, VK3DBP, PO Box 42, Mentone, Victoria 3194

If it can be shown that harmonics are causing the problem, they can be reduced in several ways. Effective circuit design will keep harmonics to a minimum, as well as operating the gear within its specified conditions. For many of us, the circuit design we use is the one in the 'black box' transceiver we bought. If you are in the same position, make sure the transceiver manufacturer is a reputable one and that the particular model chosen does not have a reputation for causing RFI problems (and yes, some do...).

A transmitter located close to a television receiver can easily cause an overload which produces spurious responses in the TV's circuitry. The result of a moderate overload is similar to harmonic distortion, because it generates harmonics in the early stages of the receiver. This can make diagnosis difficult, since taking steps to reduce harmonics at the transmitter will produce no benefit. Extreme overload produces spurious responses at all sorts of frequencies, so it is easier to spot.

Sometimes, overloading can produce mixing with a local broadcast signal. For example, a 14 MHz amateur signal might mix with a 92 MHz FM broadcast radio station to produce a difference frequency of (92 - 14) = 78 MHz.

This corresponds with TV channel 3, so interference could occur on this channel if it used in the area. Similarly, the 14 MHz amateur signal could beat with a TV channel 4 signal on 85 MHz to produce a signal on (85 + 14) = 99 MHz. The complicating factor in these cases is that the frequency experiencing the interference is not harmonically related to any amateur radio frequency. Tracing this form of interference can be very difficult and time-consuming.

Some TV receiver designs leave a little to be desired (!) and are susceptible to intermediate frequency (IF) interference. The third harmonic of a 14 MHz signal and the second harmonic of 21 MHz both fall into the typical television IF range. A high-pass filter is often the solution in this situation... or get a new telly, of course, if you're really desperate!

There are lots of clues in the ARRL Handbook about tracing RFI and dealing with it. For example, knowing about the many ways in which an RF signal can sneak its way into a domestic stereo system can help to solve problems when the neighbours get uppity. In general, then, the key is to be well-informed and ready to deal with the problem as soon as it arises.

Finally, there are many cases in which the amateur operator is the *victim* of RFI rather than the cause. A faulty insulator on a nearby power pole can wipe out whole bands for the unfortunate amateur. Lack of suppression on power tools and domestic appliances can be equally devastating. There are various avenues to follow here — a call to the power company may produce results, or a chat with the local handyman or small business with noisy equipment might help. Sometimes, a simple agreement to restrict the use of equipment to mutually-agreeable times can be the solution.

Possibly the hardest one to crack is the low-power amateur who happens to live close to a high-power operator. This is the case at the VK3DBP shack; if a fellow amateur just down the road turns on the linear to work the US, his signal passing directly overhead completely finishes off the whole band for me by overloading the front end of the receiver here. Luckily, we are both model amateur operators, and a quick chat on-air one day determined regular times when we would not work at the same time. The problem is a problem no more. If only the rest of life were so simple...

Cheers and 73 from Paul, VK3DBP, and best wishes for an RFI-free environment as we head into the next sunspot maximum!

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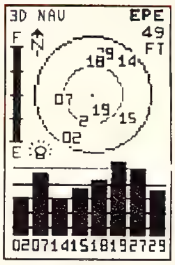

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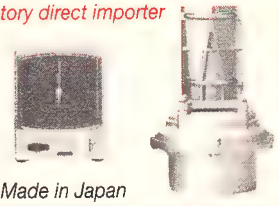

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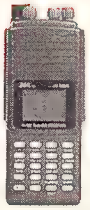

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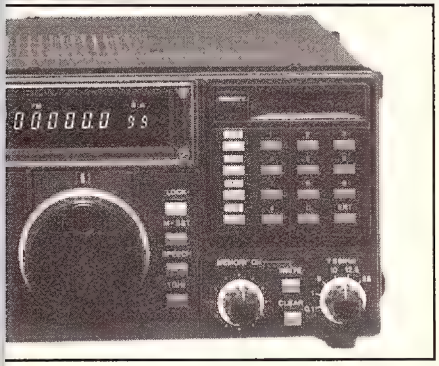


All times are expressed in Coordinated Universal Time (UTC or 'z'). Add 10 hours for Eastern Standard Time, 9.5 hours for Central Standard Time, 8 hours for Western Standard Time and 12 hours for New Zealand Standard Time. Add one hour in areas where Daylight Savings Time is observed.

New relay inaugurated

It seems that every month recently we have had news of a new relay facility, and this issue will be no exception. According to press reports, the new **BBC World Service** relay in Thailand officially opened at the beginning of November.

Located at Nakhon Sawan, some 250 km north of Bangkok, the facility will transmit radio programs in 14 languages from the Caspian Sea to the Pacific Ocean. At a cost of £30 million and taking two years of construction time, the relay boasts four 250 kW transmitters, fed by satellite link from the UK. Seven antenna arrays are already operational, and a second phase of six is to be completed during January. The Thai complex is the first completely new station to be opened by the BBC since the Indian Ocean Relay Station in the Seychelles in 1988.

Work on the 48-hectare site at Nakhon Sawan began in 1994. The fully-automatic station needs only two British staff, with operation and maintenance carried out by Thai personnel trained on-site. The relative political stability of Thailand lends itself to such an extensive facility, and the BBC has followed the lead of the Voice of America, which opened its own relay base, at Udorn Thani, a couple of years back.

Nakhon Sawon will eventually replace the BBC's Hong Kong relay, which will be phased out in readiness for the transfer of the territory to back to Chinese rule.

The engineering schedule for the BBC shows the following usage of the Thai relay for the 'W96' transmission period:

5990 kHz: 2300-0000z Cantonese
7180 kHz: 1100-1530z Mandarin, 1530-1615z (Mon-Fri) English World Service
9580 kHz: 0000-0030z World Service, 0030-0100z BBC English
9580 kHz: 0900-1000z World Service/BBC English/Slow Speed English
9580 kHz: 1000-1100z Mandarin
9580 kHz: 1100-1300z World Service
11,955 kHz: 0300-0500z BBC English/World Service
11,955 kHz: 0900-1000z World Service/BBC English/Slow Speed English
11,955 kHz: 1000-1100z Mandarin
15,280 kHz: 0000-0530z World Service/BBC English

Be aware that some of these frequencies may still come from Hong Kong, until the new relay is fully phased in.

New Zealand

Adrian Sainsbury, frequency manager at **Radio New Zealand International**, advises this revised schedule from the Wellington-based station, effective until 16 March 1997.

0459-0758z	11,905 kHz	Sat and Sun
0459-0815z	11,905 kHz	Mon-Fri
0758-1206z	9700 kHz	Sat and Sun
0816-1206z	9700 kHz	Mon-Fri
1206-1650z	6070 kHz	Occasional use, eg Sport
1206-1650z	Close down	
1650-1752z	6070 kHz	Mon-Fri
1753-1952z	9810 kHz	Mon-Fri
1850-1952z	9810 kHz	Sun
1900-1958z	9810 kHz	Sat
1953-2136z	11,735 kHz	Sun-Thu
1953-2206z	11,735 kHz	Fri
1959-2206z	11,735 kHz	Sat
2137-0458z	15,115 kHz	Mon-Thu
2207-0458z	15,115 kHz	Fri-Sat

Address: Radio New Zealand International, PO Box 123, Wellington, New Zealand. E-mail: **rnzi@actrix.gen.nz** or on the WWW: **http://www.actrix.gen.nz/biz/rnzi**
Fax: 0015 64 4 474 1433

The march of progress

For those who favour the decoding of RTTY signals from the shortwave bands, the following intercepted message will come as bad news:

To Xinhua subscribers:

Xinhua has released English stories through radio shortwave transmission for a long period of time. With the development of modern telecommunication technology, Xinhua has adopted satellite transmission to release English stories and this showed an improvement in quality and speed of transmission.

Now we decided to stop the radio shortwave transmission from January 1, 1997 and the subscribers who receive Xinhua English stories by radio shortwave transmission may contact the telecommunication and technology department of Xinhua News Agency in Beijing or the local Xinhua offices as soon as possible, so that we can discuss with you and arrange time for your receiving of stories through the satellite transmission.

The broadcast was sent by the Xinhua News Agency on November 6, 1996.

Xinhua, as well as being a source of off-beat stories that are related in all seriousness, often includes news of media developments in China that have in the past been used as background material in these pages. This message was originally posted to the rec.radio.shortwave newsgroup.

Publications news

- German company **Klingenfuss Publications** has announced the publication of three new products for the end of 1996:

—1997 Shortwave Frequency Guide
—1997 Super Frequency List on CD-ROM
—1997 Guide to Utility Radio Stations

The brand new 1997 'Shortwave Frequency Guide' is the printed version of the popular Super Frequency List on CD-ROM. It includes all final 1997 clandestine, domestic and international broadcast schedules worldwide. The publishers boast that the guide is not subject to the long editorial lead-in times that can compromise the accuracy of other similar publications.

The **Shortwave Frequency Guide** is said to be produced and distributed within only 10 days. What's more, this is the very first international publication that combines both worldwide shortwave broadcast and utility radio stations in one handy volume.

The **1997 Super Frequency List on CD-ROM** — in its third edition — now includes about 40,000 entries with all clandestine, domestic and international broadcast stations worldwide plus all utility and formerly active radio stations as well. The broadcast schedules are available as a standard .dbf (database) file for open access.

The **1997 Guide to Utility Radio Stations** (15th edition) is an international standard reference book for professional radio monitoring services and interested radio amateurs and shortwave listeners alike.

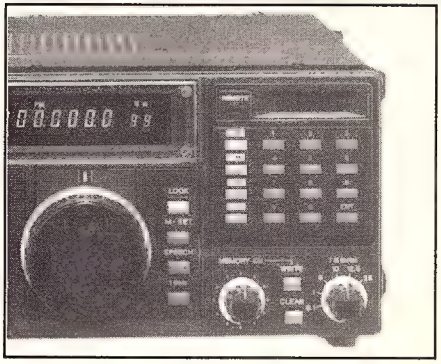
For detailed descriptions and some sample pages and colour screen shots, dial up **http://ourworld.compuserve.com/homepages/Klingenfuss/**

Of course, you can write. Try this address: Klingenfuss Publications, Hagenloher Str 14, D-72070 Tuebingen, Germany.

I can't vouch for the accuracy of the publicity blurb as yet, not having seen any of the above publications. Klingenfuss is, however, well reputed in the field, particularly with regard to its utility station references.

- A couple of days ago

... ☞



I received a sample in my electronic mailbox of the latest offering from Bernd Friedewald of the **International Listening Guide**. The ILG Amateur version is a self-extracting compressed database file which contains time and frequency data relating to 1115 stations in 173 countries. According to Friedewald, the database can be downloaded from the website of European broadcaster Nexus IBA (try **http://www.nexus.org/ILG** or **http:www.home.nexus.org/ILG**). Updates will supposedly be uploaded on a two to three-monthly basis. I have yet to take a look at the interface, as it decompresses to a file in excess of 5 megabytes, though an earlier version viewed a few months back appeared to be quite useful. No doubt a more complete version is available for a sum of money.

Regardless of the merits of the software, the publishers need to learn a little about e-mail etiquette. Not everyone would appreciate receiving a .UUE encoded file (unsolicited) to their mailbox, which in compressed form is larger than 1 megabyte.

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Ireland on shortwave

1996 has been a year when there has been a resurgence of interest at putting a shortwave station on air from Ireland, albeit if only from overseas transmitting facilities. Both the government station, **RTE**, and **Mid-West Radio** have had one-off broadcasts, which proved popular in the various target areas.

But from Thursday, October 31, 1996, programs made by **West Coast Radio Ireland** were broadcast on a weekly basis through the transmitters of Deutsche Telecom in Julich, Germany.

West Coast Radio Ireland (**WCRI**) lists a one hour program each week (Thursdays) at these times:
North America: 0100-0200z on 5910 kHz
Europe: 1500-1600z on 6015 kHz
Africa: 1800-1900z on 11,665 kHz

According to the station, the broadcasts feature news and feature programs, music, letters and 'competitions galore'. West Coast Radio Ireland promises a unique and friendly insight into various aspects of life in Ireland as well as featuring special programs on the Irish abroad.

When there is sufficient sponsorship the company intends to expand its services and provide programming in several languages on a regular basis. Programs originate at the studios of Mid-West Radio, Mayo.

Reception reports and questions about Ireland are requested. Please enclose two International Reply Coupons for a reply.

Mailing address: West Coast Radio, Ireland, Murneen Post Office, Claremorris, Co Mayo, Ireland.
If you have it, try this: email **wcri@mayo-ireland.ie**

News in brief

- Kathy Otto of Sentech (South Africa) advises that **Radio Oranje**'s shortwave transmissions ceased on October 27, 1996 at 2100z. Radio Oranje had been carried as part of the SABC internal service on the tropical and international bands.

  The licence granted to the new owners of Radio Oranje by the IBA excludes shortwave; transmissions on FM will continue as usual.
- **Radio Tashkent** has introduced a new evening broadcast in English, beamed towards Europe. I have been hearing this at 2030 and 2130z on 9540 and 7105 kHz, though frequencies in the 49 and 25 metre bands are also announced.
- Albania's **Radio Tirana** is perhaps one of the more difficult European stations to hear in these parts, however a new frequency introduced for the 'W96' transmission period has made life somewhat easier. I am hearing 6270 kHz with English for Europe at good strength from 1930z, in tandem with the weaker 7260 kHz. This is a replacement for earlier 9740 kHz.
- **Radio Thailand**'s English broadcast to the Pacific region from 1230-1300z is also on a new frequency. 9810 kHz replaces the short-lived 9505 kHz, which in turn replaced 9885 kHz from last season.
- The antenna construction for **Radio For Peace International**'s 19 metre band frequency (15,050 kHz) has now been completed. It has began its testing phase with the new 10kW transmitter operating at power levels near capacity. The RFPI (Costa Rica) frequency schedule is: **6205 kHz** (USB): 0000-1700z (output: 10 kW); **7385 kHz** (AM): 2200-1700z (output: 30 kW); **15,050 kHz** (AM): 1700-2200z (testing with 10 kW)
- Look out for the reactivated external service of the **Voice of Nigeria**, which is reported to be testing some new transmitters, according to a report on Glenn Hauser's 'World of Radio'. The station hasn't been active for over a year, and then only on a single frequency (7255 kHz). When in full flight, the Lagos station also used such channels as 9690, 11,770, 15,120 and 17,800 kHz, so these would be good places to look for signs of the reborn VON. Useful times might be 0600 and 2000z.

Central African crisis

According to a **BBC** press release, its External Service has expanded local language broadcasts aimed at refugees displaced by the crisis in Central Africa. The programs carry 'humanitarian messages' such as pleas from people trying to find their families as well as news and current affairs from Zaire, Rwanda and neighbouring countries.

The BBC has broadcast a 15-minute program each weekday in the Kinyarwanda and Kirundi languages since September 1994, a few months after the genocide of Tutsis and moderate Hutus in Rwanda, followed by the exodus of Hutus to Zaire.

From early December, the programs, which begin at 1615z and are broadcast on shortwave frequencies 11,860 and 21,490 kHz, were extended to 30 minutes from 15 minutes.

The BBC said United Nations research showed that its programs were seen as 'the most trusted information source' by the refugees in Central Africa.

RKI changes

Bill Matthews, presenter of **Radio Korea International**'s DX program, advises that RKI has made the following changes to its English language broadcasts, effective October 27:

The service from 0800 to 0900z, which had been aired to Europe on 7550 and 13,670 kHz, is now on the air on 13,670 kHz (only) to Europe and on new 9570 kHz to Australia. (This is RKI's first broadcast beamed to Australia in English.)

The relay via the BBC's Skelton Transmitting Station, which had been carried from 1830 to 1900z on 3955, has been adjusted to the 1930-2000z UTC time slot and is now carried on 3970 kHz.

The relay via RCI's Sackville facility in Canada, which had been from 1030-1100 on 11,715 kHz, has been moved to 1130-1200z UTC and is now on 9650 kHz.

During the past transmission period, Radio Korea International's German language service to Europe was carried via Skelton 2000-2100z on 6145 kHz. With the switch to the winter schedule on October 27, the service was aired from 2130-2230z on 3970 kHz.

Because of interference with Radio France International's Polish Service after 2200z, another schedule adjustment has been implemented. German now goes out via Skelton from 2100-2200z on 3970 kHz.

United States

Once again, the folk in the US are keeping us entertained with their various radio antics and sundry disasters. Among the latter is a report on the **Voice of America**'s 'Communica-tions World' program that fire has destroyed one of the new 500 kW Marconi transmitters being installed at the VOA's new Sri Lanka relay base. The other three transmitters have been sealed off and are believed to have escaped damage, however the resulting mess is still being assessed. Happily for it, the VOA has yet to officially take possession of the transmitters from Marconi.

The Sri Lanka site seems to be under some sort of hoodoo, with one problem after another coming to the fore. Apart from serious civil unrest in the surrounding countryside, structural problems with the antenna towers have also been cause for concern. Four of the 14 antennas are now said to be in place, and the VOA is still looking toward a completion date of September 1997. The Sri Lanka relay is critical to the VOA's coverage of South Asia; there are presently no high-powered transmitters (except for leased facilities) at the station's disposal in between Greece and Thailand.

On the financial side of things, some English services to Asia have been cut due to budgetary constraints, mainly affecting medium wave coverage. English to South Asia 1530-1600z on 1575 (via Thailand) has been dropped, as has the weekend service on the same frequency from 1500-1530z. English to East Asia 1200-1230z via the Poro relay in the Philippines on 1143 (actually measured around 1147 kHz) has also been deleted. These changes were apparently needed to fund the reinstatement of the VOA's morning Spanish service for the Americas, which itself was inexplicably dropped only a few short weeks ago.

The Voice of America's English broadcasts to the Asia/Pacific region are currently scheduled as follows:

p = primarily to the Pacific region
*** = Monday to Friday only**
0000-0100z: 1575, 7215, 9890, 11,760, 15,185, 15,290, 17,735, 17,820 kHz
1000-1100z: p 5985, 11,720, 15,425 kHz
1100-1200z: 5985, 6110, 9645, 9760, 11,705, 11,720, 15,425 kHz
1200-1330z: 6110, 9645, 9760, 11,705, 11,715, 15,425 kHz
1330-1400z: 6110, 9645, 9760, 11,705, 15,425 kHz
1400-1500z: 1143, 6110, 7215, 9645, 9760, 11,705, 15,425 kHz
1500-1700z: 6110, 7215, 9645, 9760 kHz
1700-1800z: 1143*, 1575*, 5990*, 6045*, 6110, 7215, 9645, 9525*, 9670*, 9770*, 11,795*, 11,945*, 12,005*, 15,255* kHz
1900-2000z: p9525, 11,870, 15,180 kHz
2100-2200z: p11,870, 15,185, 17,735 kHz
2200-0000z: 7215, 9770, 9890, 11,760, 15,185, 15,290, 15,305, 17,735, 17,820 kHz

Sister station **Radio Marti**, which broadcasts in Spanish to Cuba, has this schedule:

% = Tuesday to Saturday
0000-0300z: 6030, 7365 kHz
0300-0400z: 6030, 7365, 7405 kHz
0400-0500z%: 6030, 7405 kHz
0500-0900z%: 6030 kHz
0900-1000z%: 5890, 6030 kHz
0900-1200z: 5890, 6030 kHz
1200-1400z: 7405, 9565 kHz
1400-1500z: 11,930, 13,820 kHz
1500-1700z: 11,815, 11,930, 13,820 kHz
1700-1800z: 9825, 11,815, 11,930, 13,820 kHz
1800-2200z: 9825, 11,930, 13,820 kHz
2200-2300z: 11,930, 13,820, 15,330 kHz
2300-0000z: 6030, 13,820, 15,330 kHz

The other IBB (International Broadcasting Board) station in the news is **Radio Free Asia**, which incidentally moved into its new headquarters in northwest Washington recently.

It seems that the number of transmitters at RFA's disposal has suddenly decreased, with the Kazakhstan government withdrawing its facilities due to pressure from China.

A transmitter site near Alma Aty was initially used at 1500z on 5865 kHz and 2300z on 5855 kHz; expect other former Soviet republics to follow suit.

Don't forget my email address: **cseager@ix.net.au**

DSWCI 40 years young

Forty years ago a handful of Danish DXers met in the town of Aars in northern Jutland and decided to found the first DX Club in Denmark. They named it **Danmarks Kortboelgeklub** — the **Danish Shortwave Club**.

In January 1957 the first issue of its monthly bulletin 'Shortwave News' was issued in the Danish language. It has been published with 11-12 issues each year since then. At that time in 1956 there was much interest on shortwave listening, so the DKK quickly increased its membership. By that time a few foreign DXers had shown interest in this ambitious DX-Club which very soon published its loggings — the *SW Tips* — and QSL pages in English. A few years later, the board decided to publish SWN completely in English, and the Club was later renamed **The Danish Shortwave Club International**.

In 1974 it merged with another Danish DX club — the **Cimbrer DX Club** — and together they were called the Danish SW Clubs International. At the annual general meeting in 1996, however, it was decided to drop the plural in the name, because it often caused confusion.

As of today, the DSWCI boasts 478 members who live in 46 countries around the world (including several in Australia). Only 48 members live in Denmark, so one can rightly claim that the DSWCI is more international than Danish! A 32 page off-set printed bulletin called *Shortwave News* is filled with DX news, tips and QSL-information from the bands world. There is also a weekly electronic newsletter on the Internet called *DX-Window*, distributed exclusively for members.

DSWCI is probably the best-known DX club in the world, and though membership is getting a little expensive these days ($60+ airmail, depending on the exchange rate), it is still perhaps the best bet if one is looking to complement their membership with one of the local groups.

The address for membership inquiries is: DSWCI, Tavleager 31, DX-2670 Greve, Denmark

SLIGHTLY DIGITAL

Geoff Arnold, G3GSR, discusses the advancement of digital electronics in amateur radio

Over the past few decades, digital electronics have played an ever-increasing role in radio communications. I'm not quite sure what the first step on the way was, but as far as I was concerned, it started off with tuned frequency readouts.

At first, these relied on using external counters — the circuitry was too large and too electrically noisy to think about fitting it inside a radio set. It was not long, though, before advancing integrated circuit technology made it possible to fit a complete readout inside a receiver, in a screening box, along with the necessary filtering to keep the noise out of the RF circuitry.

This started off with large and heavy professional communications receivers, but by the mid-1970s the facility had even reached the amateur radio market — for example in the little add-in unit which could replace the mechanical readout of kHz in the Yaesu FRG-7.

That particular unit was quite an achievement on two counts. First, it had to cope with the fact that the kHz local oscillator in Wadley-loop systems tunes 'back-to-front', in other words when you tune up the band, the oscillator frequency moves lower. Secondly, it had to be crammed into the space vacated by the mechanical drum-scale mechanism. But I digress!

The digital revolution has now reached the position where every stage of the radio circuit — apart from the actual transmission path through the ether — can be based upon what are really no more than thousands and thousands of tiny on/off switches. Most of us (and especially those approaching old timer status like myself), cannot begin to understand in detail what goes on inside the increasingly complex ICs now being fitted into every professional and consumer electronic product.

However, we do need at least to appreciate the basic requirements of those multi-legged chips in their interface with the outside world.

Supplies

At one time, once the early technologies such as RTL (resistor-transistor logic) were out of the way, the digital world settled down to the original 7400-series TTL (transistor-transistor logic) where everything worked from a nominal +5 volt supply. According to the maker's specifications, the supply actually had to lie between 4.75 and 5.25 volts.

This didn't last for long, though, and for a variety of reasons all manner of other logic families, each with their own particular power supply requirements, started to appear. I am no longer involved in the world of logic circuitry (other than as a user of the end products), and the sort of ICs which I was designing with back at the beginning of the 1970s have long since ceased to exist. From reading the technical press, I get the impression now that some new logic family or variant comes out of the semiconductor houses design labs every few months nowadays.

Each seems to have its own supply requirements, and permissible logic input levels — what the chip will recognise reliably as a '1' or a '0' and I don't propose to even try to discuss them here. You'll need to go to the manufacturer's or supplier's catalogues for the particular IC family you are concerned with, in order to get that information.

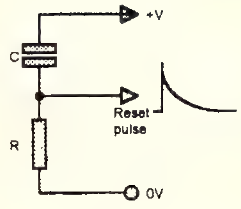

Fig. 1

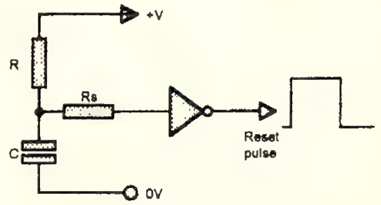

Fig. 2

Inputs and outputs

I've already mentioned the requirement to keep signal input levels within acceptable limits, and of course that will also apply to outputs, for generally an output will simply be providing the input for another stage, which will have its own acceptable input range. In talking about inputs, these are not just the straightforward signal inputs, but also those which have the job of setting or resetting a switch, or clocking or strobing a more complex circuit. In logic terms, a switch is a binary element — it has two states which may either be a **monostable** or a **bistable**.

A monostable, as its name implies, has one stable resting state, and flips over to its opposite state for a given period after a trigger signal is applied, then returns to its rest state. The bistable, on other hand, has two stable states, and will happily sit in one or the other until a trigger pulse comes along to cause it to change to the other state. In other words, it 'remembers' the last instruction given to it.

Complex logic circuits are usually based on strings of bistable switches, and it is obviously essential to make sure that each and every one has taken up the correct state to start with, when the circuit is first switched on. Every single bistable will have a slightly different speed of operation, even though the differences may only amount to nanoseconds, so when power is first applied to the circuit, there is no way of knowing what state they will take up.

Even for a single bistable, there's a theoretical even chance of it assuming either of its states at switch on. The circuit designer takes care of this by arranging for a reset pulse to he applied automatically to the bistables immediately after power has been switched on.

There are different ways of doing this, but in general they make use of the time delay inherent in a capacitor charging via a resistor. Taking the simplest case first, looking at **Figure 1**, at the moment of switch on, C carries no charge. The top plate of C is taken up to V+, and because the voltage across a capacitor cannot change instantaneously, the bottom plate

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will follow suit. Capacitor C will then charge through resistor R, at a rate dependent on their values (time constant), and the voltage at the tapping marked 'reset pulse' will decay to zero.

Because the decay naturally follows an exponential law, the end of the reset pulse is not well-defined, and the circuitry being reset may not like this very much.

An alternative is to put a Schmitt trigger inverter into the circuit, as shown in **Figure 2**, to sharpen up the reset pulse. Because of the inversion within the gate, the capacitor and resistor have to be transposed. The gate input is at zero volts at the moment of switch-on, but climbs towards V+ as C charges through R.

At some point, the switching threshold of the inverter will be reached and its output, which was at V+, falls cleanly to zero. The resistor Rs (typically 10KΩ) is there to limit the input current to the inverter to a safe value when the steady state (C charged fully to V+) is reached.

The duration of the output pulse is approximately 0.7CR, and for typical values of 1 megohm and 1 microfarad, would be 0.7 second.

Slow changes

Digital circuits in general do not like slowly changing inputs, and it is for this reason that the Schmitt trigger circuit mentioned above is often used. A trigger circuit is simply an electronic switch with built in hysteresis, which means that once it has changed over from one state to another as a result of a rising input level, it requires that level to be taken substantially lower before it will switch back again.

The same applies if the input level was falling before the switch-over. The effect of a slowly changing input can be quite catastrophic in some circuits. Back in the 1960s, when I was working in marine radio and electronics, it was decided to install a Juke-box in a 'young peoples' room in all the passenger ships in our fleet. Because the electricity supply on most of the ships was 220V DC, and the Juke boxes required 240V AC, it was necessary to fit static inverters to drive them.

Static inverters were a very new-fangled thing at the time — a couple of years earlier we would have been using motor alternator sets for the job. The Juke-boxes would consume up to 700 to 800 watts with all their amplifiers, motors and lighting, so a 1kW static inverter was selected. All went well, with the equipment surviving tropical temperatures, dud coins, having fruit juice and squashes poured into the coin slots, even having the reject button pushed right into the inside of the machine with the aid of brute force and a stiletto heel!

Then, we started to have problems with the static inverters, which would occasionally self-destruct, but luckily only ever shortly after the ship reached home port. After investigations by the manufacturers, ship and shore staff etc, it was eventually discovered that the failures happened when the ship's engineers decided to shut down the main generators by the time-honoured method of turning off their steam supply and just letting them run down to a stop. When the supply dropped to around 170 volts, the two-transistor astable oscillator driving the output SCRs simply stopped oscillating, leaving one of the SCRs passing full DC current through its half of the inverter transformer. Adding a little voltage sensing circuit, which closed down the unit when the mains input went below 200 volts, quickly did the trick and vice versa!

It was no help in that case, because we didn't know exactly when the engineers had turned off the steam, but sometimes you may get a clue as to the cause of a problem by observing how long it is after a given event, before the fault occurs. For interest, I'll give you a couple of examples, both of them from the valve era, although the second could just as well happen today.

The first relates to an echo sounder unit, which used a display consisting of a neon tube mounted on the end of a swiftly rotating arm, which flashed to indicate the depth of water under a ship's keel, read off from an adjoining circular scale. The driving motor, arm, and scale, plus a single triode valve DC amplifier, were mounted on a hinged door, with a cable-form connecting them to the rest of the circuitry in the back of the case. One of these units fitted in a ship I sailed on, developed an intermittent fault which caused the neon to stop flashing.

Faults which come and go are always the hardest to track down, but after opening and closing the front door of the unit a few times whilst checking operation, this one changed its characteristics slightly — when the door was open everything worked perfectly, but when it was closed the neon flashes faded out. It was eventually realised that the disappearance and reappearance of the flashes took around 25 to 30 seconds each time, and this pointed to the heater circuit of the DC amplifier valve.

As you've probably guessed by now, there was a broken wire in the cable form, which was being flexed by opening and closing the door, so that sometimes the valve lost its heater supply, taking around 30 seconds to cool down and lose emission from the cathode, and another 30 seconds to warm up again when the supply was restored.

My last 'time-delay' fault relates to a problem with a public address and sound entertainment system fitted in a small passenger ship which had been bought from a previous owner. It needed quite a bit of work done to it, such as replacing every single electrolytic capacitor in the pre-amplifier and amplifiers, to restore the bass response to something reasonable.

However, the particular fault I want to describe was a report from the ship's staff of occasional 'motor-boating' instability (a sort of 'putt-putt-putt' noise) when playing music tapes on the big reel to reel recorder. While the ship was in port between voyages, we started testing for this, and indeed we could get the fault to appear occasionally. However, it seemed totally random, and our first clue came when it was noticed that it only seemed to affect some tapes, usually those on 8.25in or 10.5in reels. These were most unusual for pre-recorded music tapes of the time, which normally came on 7-inch reels, and that ought to have aroused our suspicions earlier.

It finally dawned on us that on any given tape, the fault always appeared at the same time, and we realised the distortion was actually on the tapes. We later discovered that virtually all the music tapes on board — all of which had come with the ship — were not in fact prerecorded, but had been produced by a relative of the previous owners who was something of a hi-fi buff. He had recorded them off-air, via a tuner or receiver which was intermittently motor-boating!

The moral of this story is that should you encounter an intermittent fault, it is always worth noting down how long after switch-on, change of mode, or whatever, that it took to appear.

You could save yourself a lot of time!

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Online 1996

Michael Evans looks at what communications-type software is available on the Bulletin Boards...

Welcome to dying days of 1996, folks, and to another edition of Online. I trust your Christmas and New Year are about to be everything that you expect and then some.

I have mentioned previously that the development of radio-orientated software does come in dribs and drabs, as the saying goes. With that said, now must surely be classed as a fully-fledged drought! The development of new and exciting software appears to have dropped off to the point of extinction. There is little or nothing coming out of Australia. Come on folks, we have some brilliantly-talented programmers who are into radio in some form. Lets get some good old Aussie products out there — even if it's a commercial product drop me a line and we shall review it if possible. Free publicity!

You may recall a few issues ago I did a review on an **ACARS** decoder. ACARS stands for **A**ircraft **C**ommunications **A**ddressing and **R**eporting **S**ystem, and is in use around the world for the purposes of relaying relevant aircraft information from the planes to the airports and vice versa.

That decoder produces a log file which, if you leave the software running all day, can produce log files that are a couple of Megabytes big. Not a pleasant task to sit there and go through it all seeing which planes flew into or out of that particular airport.

Anyway, a very handy little utility called **DACARS** has been written by a chap called Bart Hoekstra in the Netherlands. It can strip out some parts of the data to produce either an onscreen list or, on the registered version, a database.

Moving along to exactly how it works, the Log file is read record after record. When a new record is found, the program checks the flight number and registration number firstly for invalid characters (the only valid ones are 0 to 9 inclusive, the - sign and letters A through to Z). If any other characters are found in the record the program skips to the next sequential one.

Looking at the document file, the following then takes place:

1 It checks if the registration and flight number were noted before in this log file. If so, the program skips to the next record. When a registration already logged is logged again with another flight number it will be treated as a new flight, and the same goes the other way around.

2 When a new flight — one not logged before in this file — shows up, a new record is created in the *.DBF file with the relevant info for this flight.

3 The program checks the 'all heard' database. If a registration and company are logged before, the last noted date will be updated.

4 If the registration and company are not in the 'all heard' file, the program will add a new record to this file, where the first and last noted dates are the same. Also an asterisk (*) will be put after the registration in the *.DBF file, so the aircraft logged for the first time can be easily spotted when viewing a log file.

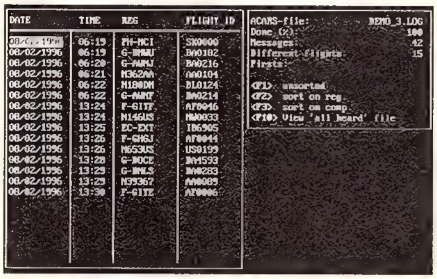
5 Finally, it takes a look at the message number. If the message number is the same as in the last message for this flight the message will be ignored. If it's a different message number the message content will be copied to the *.DBT file, which can be viewed by pressing <Enter> on a flight (section 5.4) The DBT file will contain only unique messages per flight-id.

So now that we know how it works, let's see what happens when we run it. The raw ACARS demonstration file that comes with the Demo is shown below. For those of you unfamiliar with the ACARS format, yes all this stuff *does* actually mean something. I purchased an excellent book called *Understanding ACARS* by Ed Flynn, which helps understand all of this jibberish.

Anyway, the RAW log format is seen as shown below:

```
ACARS mode: S Aircraft reg: .PHC
Message label: H1 Block id: MSG.
Flight id: SK0000
Message content:-
#DFB143PH-MCIB767-300 39602070619
24 220 410002390.809-29.8 51P119
----------------------------
[08/02/1996 06:19]
                        and so on
```

When we run it through the DACARS program, the resulting output looks like this:



```
DATE         TIME   REG      FLIGHT_ID   ACARS-file:          DEMO_3.LOG
08/02/1996   06:19  PH-MCI   SK0000      Done (%):                   100
08/02/1996   06:19  G-BNWU   BA0182      Messages:                    42
08/02/1996   06:20  G-AWNJ   BA0216      Different flights:           15
08/02/1996   06:21  N362AA   AA0104      Firsts:
08/02/1996   06:22  N180DN   DL0124
08/02/1996   06:22  G-AWNF   BA0214      <F1>  unsorted
08/02/1996   13:24  F-GITF   AF0046      <F2>  sort on reg
08/02/1996   13:24  N146US   NW0033      <F3>  sort on comp
08/02/1996   13:25  EC-EXT   IB6905      <F10> View 'all heard' file
08/02/1996   13:26  F-GHGJ   AF0044
08/02/1996   13:26  N653US   US0199
08/02/1996   13:28  G-BOCE   BA1593
08/02/1996   13:29  G-BNLS   BA0283
08/02/1996   13:29  N39367   AA0089
08/02/1996   13:30  F-GITE   AF0006
```

So now you can quickly locate the aircraft's registration number and the relevant flight ID together with date and time, which is a handy quick way to deal with those log files.

The demonstration archive is only 97K and can be obtained directly from the author's home internet site. Using your web browser, look for the address **http://www.epsilon.nl/~bart**. The author is on the net for email at the address **bart@epsilon.nl** or on FidoNet BBSs at bart hoekstra 2:500/41.

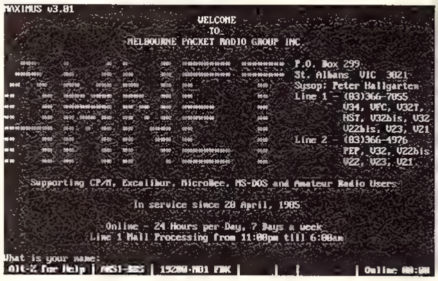
The fully-registered version costs only $US15, and once registered you obtain the extra features like being able to output in either dBase III+ or ASCII text formats, the 'view all heard' function works, indication of flights first logged, and you can view all unique messages per flight number.

If you have the ACARS decoder which produces the log files as listed above, then this is well worth a look.

AMNET — VK3BBS

The Amateur Radio fraternity in particular will just *love* this BBS. AMNET is operated in Melbourne by Peter Hallgarten, VK3AVE. Peter has been operating the BBS for many moons now and offers a vast service to the amateur radio community.

The BBS itself runs Front Door as the front-end mailer system, which is what actually will answer your call in with your modem. You simply press your <ESC> key twice when prompted to do so and then the BBS software (in this case Maximus) is loaded up and presents you with your login screen:

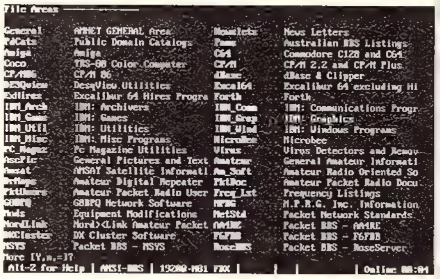


```
MAXIMUS v3.01
                        WELCOME
                          TO
             MELBOURNE PACKET RADIO GROUP INC.

                                          P.O. Box 299
                                          St. Albans  VIC  3021
                                          Sysop: Peter Hallgarten
                                          Line 1 - (03)366-7055
                                                   V34, VFC, V32T,
                                                   HST, V32bis, V32
                                                   V22bis, V23, V21
                                          Line 2 - (03)366-4976
                                                   PEP, V32, V22bis
                                                   V22, V23, V21

  Supporting CP/M, Excalibur, MicroBee, MS-DOS and Amateur Radio Users

                In service since 20 April, 1985

             Online - 24 Hours per Day, 7 Days a week
          Line 1 Mail Processing from 11:00pm till 6:00am
What is your name:
 Alt-Z for Help | ANSI-BBS | 19200-N81 FDX |     |   |       | Online 00:00
```

First-time callers are prompted for their real name, address and telephone number. It is important that you use your true details when answering these questions. The System Operator (Sysop for short) needs to know this information should he/she ever have a need to contact you, plus many BBSs don't allow you access in until they have verified this information anyway.

Once you answer all of the questions (which are not very intrusive) you are then prompted to enter your password for you use when logging into AMNET, and once that's done, you are shown a screen detailing the basic rules of operation while online and you're in.

The files database carried online for registered users to download is very large indeed. Here is a small sample of some of the areas available:

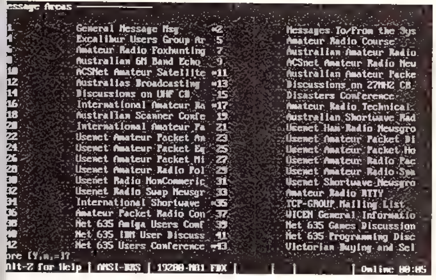


```
File Areas ──────────────

General     AMNET GENERAL Area          Newslets    News Letters
PdCats      Public Domain Catalogs      [illegible] Australian BBS Listings
Amiga       Amiga                       C64         Commodore C128 and C64
Coco        TRS-80 Color Computer       CP/M        CP/M 2.2 and CP/M Plus
CP/M86      CP/M 86                     dBase       dBase & Clipper
DESQview    DesqView Utilities          Excal64     Excalibur 64 excluding Hi
ExHires     Excalibur 64 Hires Progra   Forth       Forth
IBM_Arch    IBM: Archivers              IBM_Comm    IBM: Communications Progr
IBM_Game    IBM: Games                  IBM_Grap    IBM: Graphics
IBM_Util    IBM: Utilities              IBM_Wind    IBM: Windows Programs
IBM_Misc    IBM: Misc Programs          MicroBee    Microbee
PC_Magaz    Pc Magazine Utilities       Virus       Virus Detectors and Remov
AscPic      General Pictures and Text   Amateur     General Amateur Informati
Amsat       AMSAT Satellite Informati   Am_Soft     Amateur Radio Oriented So
[illegible] Amateur Digital Repeater    PktDoc      Amateur Packet Radio Docu
PktUsers    Amateur Packet Radio User   Freq_Lst    Frequency Listings
G8BPQ       G8BPQ Network Software      MPRG        M.P.R.G. Inc. Information
Mods        Equipment Modifications     NetStd      Packet Network Standards
NordLink    Nord><Link Amateur Packet   AA4RE       Packet BBS - AA4RE
DXCluster   DX Cluster Software         F6FBB       Packet BBS - F6FBB
MSYS        Packet BBS - MSYS           RoseBBS     Packet BBS - RoseServer
More [Y,n,=]?
 Alt-Z for Help | ANSI-BBS | 19200-N81 FDX |     |   |       | Online 00:04
```

Likewise, there is a large number of FidoNet message areas available for people to participate in. The topics are not only radio orientated, as you can see in the screen grab at the top of the next page.

The interesting thing about this BBS is that not only does it operate as a FidoNet dial-in BBS for users at home with their modems, but licensed amateur radio operators with suitable

By Michael Evans - email to michael@tbsa.com.au



```
essage Areas ──────────
1      General Message Msg        *2       Messages To/From the Sys
4      Excalibur Users Group Ar    5       Amateur Radio Course
6      Amateur Radio Foxhunting    7       Australian Amateur Radio
8      Australian 6M Band Echo     9       ACSnet Amateur Radio New
10     ACSNet Amateur Satellite  *11       Australian Amateur Packe
12     Australias Broadcasting   *13       Discussions on 27MHZ CB
14     Discussions on UHF CB      15       Disasters Conference
16     International Amateur Ra  *17       Amateur Radio Technical
18     Australian Scanner Confe   19       Australian Shortwave Rad
20     International Amateur Pa   21       Usenet Ham Radio Newsgro
22     Usenet Amateur Packet An   23       Usenet Amateur Packet Di
24     Usenet Amateur Packet Eq   25       Usenet Amateur Packet Ho
26     Usenet Amateur Packet Mi   27       Usenet Amateur Radio Pac
28     Usenet Amateur Radio Pol   29       Usenet Amateur Radio Spa
30     Usenet Radio NonCommeric   31       Usenet Shortwave Newsgro
32     Usenet Radio Swap Newsgr   33       Amateur Radio RTTY
34     International Shortwave   *35       TCP-GROUP Mailing List
36     Amateur Packet Radio Con   37       WICEN General Informatio
38     Net 635 Amiga Users Conf   39       Net 635 Games Discussion
40     Net 635 IBM User Discuss   41       Net 635 Programming Disc
42     Net 635 Users Conference  *43       Victorian Buying and Sel
ore [Y,n,=]?
lt-Z for Help | ANSI-BBS | 19200-N81 FDX |     |     |       | Online 00:05
```

acket equipment can piggyback through it to ain access to the packet radio side of the BBS.

The system configuration is quite interesting nd, considering the speed of the main machine, t works very well indeed.

86 DX 25 Clone 64 K Cache RAM; DesqView 2.31 and QEMM v5.11 Multi Tasking Software; 8 MB Of RAM; Five ESDI 383MB Hard Drives; Six erial Ports, as follows: Two for dial-in access with tandard modems; One for 10.149 MHz 300 Baud SK Using AEA PK-232 in KISS Mode; One for 47.575 MHz 1200 Baud AFSK Using PacComm iny-2 in KISS Mode; One for 147.600 MHz 1200 aud AFSK Using AEA PK-88 in KISS Mode; One for 4.111 MHz 1200 Baud PSK Jsing Tasco TNS-24 in KISS Mode.

So if you wish to log in and ake a poke around, the numbers to call in on are (03) 9366 055 for Line 1, while Line 2 is n (03) 9366 4976. The idoNet mail address of AMNET is 3:635/502. To ecome a full user of this BBS ou need to join up as a member of the Melbourne Packet adio Group for a modest fee. or further details there are creens of the relevant information available online.

If you wish to go along and join in the fun of the Melbourne Packet Radio Group you can attend one of their general meetings held at 7.30 pm on the first Thursday of each month at Moorabbin and District Club Combined Club Rooms in Turner Street Highett (Melway map reference 77-J9)

Speaking of Radio BBSs, here are some regular very good radio BBSs to go and visit with your PC and Modem:

Short Wave Possums BBS (02) 9651 3055. All speeds up to V34. For SWL and Scanning
Satcom Australia BBS (02) 9905 0849. All speeds up to V34. For Satellite and Scanning
Fox's Lair BBS (03) 9888 7741. All speeds up to V34. For Amateur and Scanning
Radio Shack (03) 9532 5737. All speeds up to V34. For DXing and Scanning

Don't forget, if you are a first time caller to any of these BBSs you will have to answer a few questions about yourself and probably leave a contact telephone number. As I have mentioned previously, this information is important so treat it as such and leave your correct details. It will ensure a quicker registration onto the BBS, and will mean a higher access level is available to you on your next call.

And now to add a few more to that listing — the following BBSs have come into me via Email over the past months as sources for radio-orientated software as well. I have not tested many of these, so if you do happen to find any that are no longer active or if you have others to add to this list, then drop me a line via the net to **michael@tbsa.com.au**

Blazin' Saddles (079) 26 5941
Clown BBS (074) 42 2597
Dataline BBS (073) 29 02632
Horizon Online Systems (077) 23 0264
Lands BBS (073) 39 13882
Adam (083) 37 05775
Adelaide Data Exchange (08) 262 8534
Casper BBS (08) 370 7827
Dark Moon BBS (08) 364 0577
Flinders North BBS (086) 75 2065
Genesis Community BBS (08) 369 2326
Communications' Nuts' BBS (002) 63 4424
WICEN Tasmania (004) 25 6035
1616 Systems BBS (02) 997 18744
Bifrost BBS (02) 952 82290

A sad fact of life is that many very good BBSs come and go, so support your favourite BBS as they are an important part of the technological chain in today's society.

The dial-up BBS offers many services that the internet just does not, and they do it either for free or for a minimal annual fee.

Come on, get those modems dialling today.

Until next month, happy computing, people!

A helpful hint for NetComm modem users

Many people who have purchased the more current models of NetComm 28.8K modems have apparently been experiencing random disconnections from BBSs and Internet Service Providers.

Well, a very kind soul has been playing with this problem in Western Australia. He tried practically every configuration known to him, and finally found the ideal INIT string to set up your modem with.

With your terminal program, set up your modem as follows:

ATandF1S0=0S7=60-K0X3andC1 andD2%E2L3

He also advises that an **andF0** instead of the **andF1** may work better in some areas of Australia. So if you are one of the people who this is affecting, give that string a try; it may just solve your problem.

Thanks to 'Uncle Brian' in WA for the tip... *(Thanks from me too. I'm now using this string on my 33.6 too and it has helped a lot (but hasn't completely cured it). It's been driving me crazy!! Ed.)*

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BENELEC 24-ELEMENT DISCONE

By Jason Reilly

Looking for a quality, Oz-made discone? Then check this out...

My belt erupts with an insistent high-pitched ringing sound. Well, actually it's my mobile phone making the sound, pleading me to stab a button — *any* button — on its face to answer a call. When I'm away from the office, my mobile phone becomes my office. "I wonder who this is?" I mutter as I answer it. It's Len, chief supremo of Radio and Communications. He wants to know where I am in Melbourne, can I pick up a discone, and would I like to review it. *Would* I? Does a fish need water to live?

"Yes, that would be great... well, I suppose I force myself anyway, thanks, Len". I'm not able to collect the antenna myself, so I'll have to leave it to a courier to send it to me. That's always the worrying bit. I have lots of trouble getting anything delivered to me with reliability. Lots of my mail goes missing from time to time but, as luck would have it, very few of the bills go astray. Some days later, waiting in eager anticipation, it arrives. Good, test one passed. I've actually got the review antenna in my hot little hands.

Opening up the package, I see lots of metal rods, some locking nuts, a mounting tube, a discone hub and some instructions. The instructions proclaim that the discone is made by **Benelec**, and that it was designed and made in Australia.

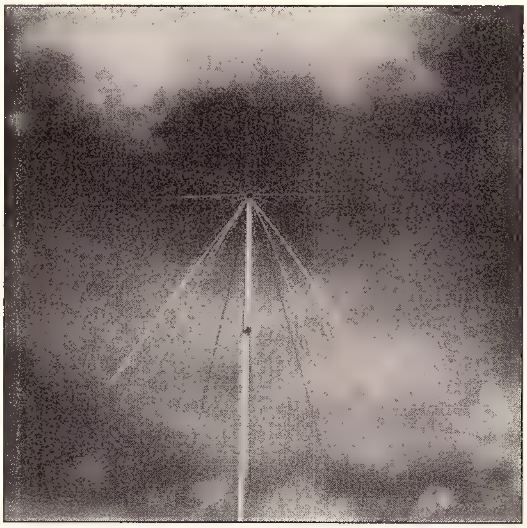
Looking a bit further, I notice that the package contains twelve long and twelve short elements, for a total of 24 elements. The picture on the instructions show a 12-element discone, just like the one my neighbour has on top of his roof. Hang on, something funny is going on here, why do I have 24 elements? Read the instructions, silly! I have received a 24-element discone, it's just that I saw the picture of one with 12 elements, which threw me off course for a minute.

A quick read through the instructions tells me that I should have X amount of screws and nuts and elements and the like. Good, test two passed, all the bits are there.

If you are going to mount this discone on a mast of some sort, you will need to get a few antenna-to-mast clamps or you might be able to get away with a couple of worm-drive stainless steel hose clamps.

The instructions also give the reader a bit of information on the discone — how it works, some of its advantages, and gives some specifications. Speaking of specifications, the manufacturer claims a transmit power handling capability of 250 watts, a bandwidth of 60-1000 MHz (transmit with VSWR up to 1.5:1 above 100 MHz). The elements are all made from stainless steel, with the hub made of chromed brass, and the mounting tube also of stainless steel.

The instructions are quite clear and concise as to how to put the thing together, which is great for someone who has never assembled a discone before. The instructions say that you should put the short horizontal elements on first, then the long, droopy elements (the 'cone'), and then put on the connector and cable, then the mounting tube.



I've always found it easier to put the connector and cable onto the hub first thing, then put the mounting tube on and secure that, then tackle the elements, preferably the cone elements first, tightening the lock nuts as you go, and then fix the whole affair to your mast. But, do the installation however you feel best. In any case, it always helps to do a trial fit first, just to see how everything goes together.

Assembly...

So how *does* everything fit together? On the review antenna, everything went together very nicely indeed, but it looked pretty tight once the locking nuts were introduced. With so many elements sitting so close together at the hub, the locking nuts can be difficult to do up, so the trick here is to use the smallest possible spanner that you can find to do up the locking nuts (of 7/32" size), or even consider using some strong needle nose pliers. If you really want to make sure that the elements will never come loose, apply a bit of Loctite to each element where it screws into the hub, tighten each element with a pair of multigrips close to the hub (not too tight or you will fatigue or may even break the element), then do up the locking nut.

I noticed that the hub appeared to be, in a previous life (so to speak), a hub for the 12-element discone version, and has had extra holes drilled and threads tapped for the 'extra' 12 elements. These new holes weren't drilled with over-great precision, and as a result, when the elements do go in, they don't all sit in the perfect geometric shape that you'd hope for. Some of the horizontal elements weren't truly horizontal, and some other elements weren't evenly spaced — at least on my review antenna they weren't. Perhaps it was a prototype...

Still, it's nothing that can't be fixed by a bit of judicious bending and re-aligning with the pair of multi-grips that you used to tighten the elements up with.

The finished antenna isn't as strong as some discones I've seen, but as long as you don't install the antenna where it is likely to suffer extreme icing or windy conditions, I don't see this as a problem.

Connecting the antenna to some cable is no drama, since the hub of the discone has a SO-239 socket, which really looks the part with its gold-plated centre pin.

The choice of cable is up to you, but since the discone is a base-type antenna, you may as well use at least RG213. I favour Belden 9913, which has some really astonishing performance, far better than RG213, particularly at higher frequencies.

Unlike the famous Heliax, 9913 is readily available to the hobbyist, and you can use easily-available connectors with it. Oh, choose your connectors carefully, too. If you buy $2 PL259s, then $2 performance is all you should expect...

If you are installing the antenna outside, the application of some silicone waterproofing sealant or some vaseline around the connector and cable will help with waterproofing. The PL259 series of connectors really wasn't designed to be fully waterproof. You may want to consider earthing the antenna, via the mounting tube, to your mast, and earthing the mast to ground if you think electrical noise is going to be a problem, or if you live in a lightning-prone area. Of course, if you choose to mount the discone in the loft of your roof space (under a tile roof only, of course!) then you won't have to worry about waterproofing too much. Come to think about it, you won't have to worry about earthing the antenna, or mast mounting worries, or nosy neighbours asking silly questions as to when you think you'll make contact with aliens.

Ok, let's take a look at what *doesn't* come with the antenna. First, as I've already mentioned, you will need some mast-mounting clamps or stainless steel hose clamps, since these aren't included with the discone. I also notice that the elements don't have those little static-caps on the ends of them.

These little plastic thingies serve a purpose other than 'looking right' or preventing injury if you poke an element in your eye; when you put your antenna up into the open, as the wind blows past your antenna, static electricity builds up on your antenna due to the friction of the wind passing it. When the static charge builds up to a point, it will want to discharge. And since the static electricity charge will want to discharge from a sharp point, the tips of your elements on the discone will be where it will discharge from, causing noise on and possibly even damage to, your receiver connected at the other end. Covering the sharp points with static caps, then, will reduce or prevent the discharge and, hence, help reduce the noise experienced on your receiver.

There are two ways around this omission. Make sure your antenna is earthed, which will help prevent the static build up in the first place. In this case, you can earth only the 'cone' part of the antenna. Don't earth the elements — the antenna may not work so well if you do! The other thing you might like to do is to find static caps and add them on to the antenna or, if you have the patience, file each element's end into a nice smooth rounded end with no sharp points or edges that just invite electrons to discharge from.

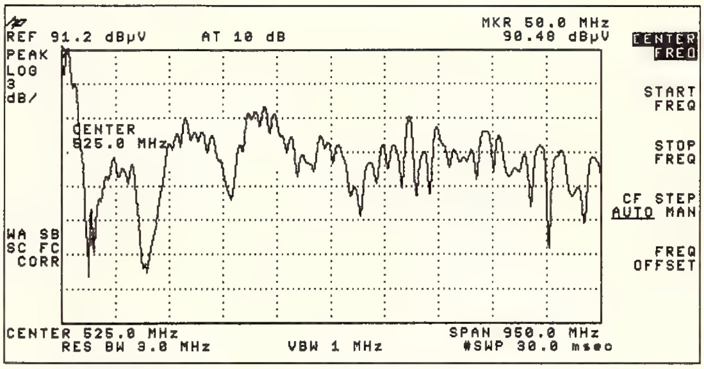
The Benelec 24-element discone also does not have provision for a top-mounted whip. I don't see this as being a great problem unless you want greater performance below about 100 MHz. The discone itself is big enough to resonate, theoretically, down to about 70 MHz due to its dimensions. It's interesting to note that the manufacturer specifies a VSWR of less than 1.5:1 above 100 MHz. I can't see why this antenna couldn't be used to efficiently transmit down to, say, 75 MHz, given its size.

On the air...

Having put the construction, the design and the mounting considerations out of the way, it's time to place the metal skyward and see how it performs. Like my review of the ProCone, I'll split the test into two parts. First, the on-air comparison between my faithful Tandy discone, and the more 'scientific' sweep test to show up any particular strengths or weaknesses.

First, the 'on-air' test. Simply put, this antenna had comparable performance with my Tandy discone, maybe a little better at the lower frequencies due to its larger dimensions. **Table 1**, below, shows relative receive performance as shown on my receiver's signal strength indicator between the two antennae over a select range of test frequencies:

Just before going over the 'sweep' test of the Benelec, I'll quickly recap how to interpret the results of the printout. A small signal generator is connected to the antenna, which is 'swept' up and down between two frequencies that I nominate. This signal is sent to the antenna, and because not all antennae are perfect, some of this signal is reflected back towards the signal generator. If this reflected signal is picked off and fed to a spectrum analyser, we can see just how much signal is being reflected by the antenna at whatever frequency.



Frequency (MHz)	Tandy 16-el discone RSSI	Benelec 24-el discone RSSI
49.8300	5	7
112.6000	3	4
250.4500	2	2
467.5000	1	0 (still audible)
945.8000	3	2

Table 1

Looking at the printout, a valley shows that little signal is being reflected, hence the antenna must be radiating well at this frequency. A peak shows more signal being reflected, thus indicating a possible loss in efficiency. It can be seen that the first resonant valley exists at about 90 MHz, with another nice wide valley at about 200 MHz. The average level after this second valley isn't too high, either, which indicates a good 50 ohm match (or thereabouts) across the frequency range of this antenna. Generally, all the desirable characteristics that a well made discone should possess are found in the Benelec 24.

A question that might be posed at this point is: what real advantage does having the extra elements offer over an equivalent discone with fewer elements? Certainly, if your discone has too few elements, you begin to run into bandwidth, impedance and directivity problems. The bandwidth would be limited, the impedance matching wouldn't be very inspiring, and the radiation pattern (both for receive and transmit) wouldn't be exactly what you'd call omnidirectional.

As more elements are added to the discone, the bandwidth and impedance limitations take care of themselves, and directivity also improves. As with anything, however, the law of diminishing returns begins to creep in, so if you add twice as many elements to a discone, it won't end up being twice as good. Design and build quality considerations will yield more performance increase than extra elements, especially at really high frequencies.

I've seen performance specifications of military SIGINT discone antennae, with an upper limit beyond 2 GHz. But, oh boy, were they expensive! For my money, little advantage is gained beyond 16 elements in a discone for our purposes. But, this antenna's price tag is similar to many other discones' tags, so you may as well go for as many elements as your money can buy.

The bottom line...

In summary, then, the Benelec 24-element discone can be a bit tricky to assemble with those locking nuts being in close proximity. The review unit was a little off 'true' with some of the elements, wasn't particularly strong or heavy duty, yet it wasn't over heavy.

I reckon it should be rugged enough for most situations, and will produce good RF performance. It's engineered quite well, and hence should last a long time given a little regular maintenance. At $145 it represents great value, too, given that most 16-element discones cost this much or more.

And now, a good deal: Peter Vernon of **Vernon Communication Engineering**, will sell the first 10 customers this discone for the amazing price of $99. This is quite outstanding value, so be quick.

Radio and Communications thanks Vernon Communication Engineering for supplying the review antenna.

IN FLIGHT INFO

With Bob Bell, VK2UTG,
PO Box 16,
Georges Hall,
NSW 2198

If you happen to live in a backwater town, with no airport within cooee, you probably have to rely solely on HF radio communications to enjoy your fill of aircraft radio. A lot of others are in your shoes. Sure enough, we don't all live in or near big cities in Australia!

So how many VHF aircraft channels are able to be copied in your area? One, two maybe, or even three? And that's it?

It's sad that you as an aircraft radio enthusiast may have to put up with one-sided VHF conversations, because you can only hear the aircraft talking, and not the distant ground stations.

But amidst all this, there is an answer: domestic Optus Satellite communications, carrying AirServices Australia transmissions from remote areas. You just need a Ku-band satellite TV system, where you hook up your scanner to the rest of the gear, with a few extra cables and splitter devices. The scanner is used to 'down-convert' Ku-band signals from the 12 GHz range. The splitters are used to avoid having you pump voltage into your scanner antenna socket, nominally about 17 volts DC.

Write or phone your favourite satellite TV dealer, such as AvComm in Balgowlah NSW, and they will put you on to how to hook everything up to listen to VHF transmissions from aircraft and ground stations, all over Australia, courtesy of the Optus domestic satellite.

You may live near where Crocodile Dundee was filmed in the Northern Territory, or in the jungle areas of Northern Queensland, but you can still listen to big-city VHF airband communications by satellite!

* * *

John Pinkerton, of Macalister in Queensland, recently wrote to me to inquire about an incident he monitored back in 1987, on November 28 to be precise, when a large search was going on off the coast of South Africa for persons in a downed plane, possibly an airliner.

Until now, John hasn't lived up to his 'private eye' namesakes, and has never asked anyone who or what owned the aircraft, if it was an airliner, or what!

Well John, the answer is simple. The drama you heard unfolding on 5634 kHz USB on that night was a huge search for one of South African Airways Boeing 747-Combis (combined passenger and freight on the main deck), which went down in the sea off the South African coastline.

It was actually about 150 to 200 nautical miles off the South African coast, on a flight from Taipei, in Taiwan, to Johannesburg. I'm told a fire broke out in the cargo area of the main deck, and the flames ravaged the aircraft and consumed it very quickly. The burning wreckage fell in the ocean. The airliner was ZS-SAS, a Boeing 747-244/SCD (Combi), with the radio callsign of 'Springbok 212'.

'Springbok' is the International Civil Aviation Organisation's official designated callsign for South African Airways.

If you copy any of the South African Airways fleet on the radio, I would not even bother sending away with a prepared form card for a try at a QSL. The reply you get is almost akin to asking you what type of cell you want if you are ever dumb enough to visit South Africa after having the guts to write the letter of QSL request! They sure don't appreciate monitors listening to their aircraft, and make no bones about telling you so.

If however, after reading this last paragraph, you still wish to persevere, then write to South African Airways Operations, South African Airways Towers, PO Box 7778, Johannesburg 2000 South Africa. Good luck!

The longest service flown by SAA is New York to Johannesburg, which takes 14 hours 50 minutes to fly, using Boeing 747-444 aircraft. It's been servicing this 7,969 nautical mile route since January 1991, when it took delivery of the 747-400s. The first 400 delivered was ZS-SAV.

Because of prevailing winds, a fuel stop is required to arrive safely at Jan Smuts International Airport, in Johannesburg. The fuel, or 'technical', stop is accomplished at Cape Verde. Another really long-haul journey undertaken by South African Airways Boeing 747-444s is Cape Town to Miami, which takes in excess of 14 hours 20 minutes.

* * *

You may have noticed that the Boeing 747 aircraft purchased from new by South African Airways have the company code '44' in the model variant number. For example, SAA Boeing 747-400s are in fact designated 747-444!

This situation exists with *all* Boeing airline customers, all of whom get their own variant number. Qantas, for example has the code of '38'. Its aircraft are Boeing 747-438s! Get the idea? Each airline has a slightly varying model code, with the variation being in the last two digits.

Another example of this is when

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Qantas bought two Boeing 747 Special Performance (SP) jumbos. These aircraft are shortened versions of the Boeing 747-200. The Qantas model numbers for its two SPs were Boeing 747 SP-38s. Conversely, South African Airways' six Boeing 747 SPs were SP-44s!

The SP variant of the Boeing 747 is some 10 metres shorter than B.747-200 series, and they can fly at altitudes of up to Flight Level 450 (45,000 feet) operationally.

Seeing as we have whetted your appetite for more of the South African Airways 'Springboks', try these SAA company Long Distance Operational Control channels (LDOC) and hear lots of great monitoring material:

5532 kHz
8933 kHz
11,354 kHz
13,330 kHz
17,925 kHz
21,964 kHz

The callsign is Springbok Johannesburg. Enjoy!

* * *

I've also been getting lots of letters inquiring about the best hand-held scanner with which to monitor all kinds of aircraft lately.

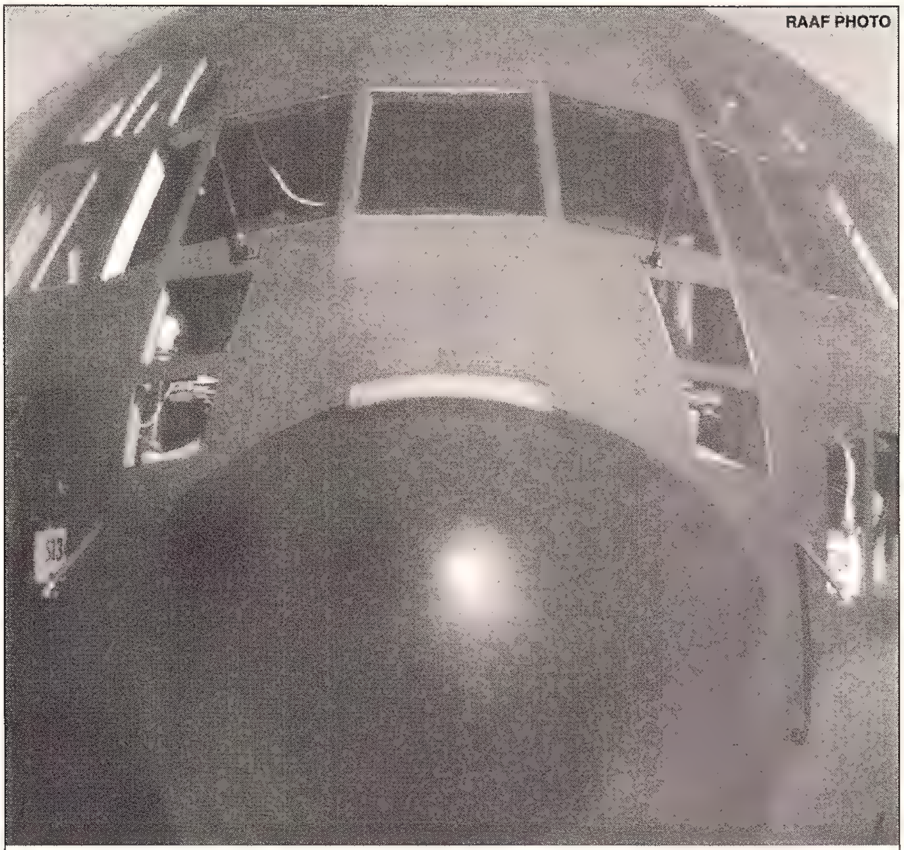
I used to be a big fan of Tandy products, namely the Realistic brand of scanners. But these days, that's all changed. The Realistic technology has essentially stood still, while other brands like Uniden Bearcat have become very innovative and interesting.

My personal choice of hand-helds is the Uniden Bearcat UBC3000XLT, which is a 400 channel scanning radio, with 20 banks of 20 channels, and coverage from 25 MHz through to 1.3 GHz! Yep, up into the microwave band!

This brilliant little radio sells for around $580 new, and comes complete with wall plug-pack charger, leather protective carrying case, and a brilliant easy-to-understand 'Operating Guide'. You don't have to do a university course, majoring in logic just to program your radio! It's simple, and band coverage is so extensive, you don't miss out on *any* of the action.

If you only intend to purchase one scanner, to service both car, home, and while on foot, the UBC3000XLT is magnificent.

I've never heard a bad word said about the radio, and anyone that wants mine has gotta fight me for it. Great stuff, and it looks bloody good too! Available at Dick Smith outlets, as well as numerous other independent dealers.


RAAF PHOTO

A Lockheed C130 Hercules, as monitored by scanner listeners at Bankstown's 'Gala Day of Aviation'.

(Since Bob wrote this, he may have learned about the new hand-held units from Diamond and Icom. Both cover 500kHz to 1300MHz, and while the Diamond is easily the smallest tunable scanner ever, the Icom puts all modes and good selectivity into a small package. Watch these pages for more! Ed.)

* * *

A whole tribe of aviation radio monitoring enthusiasts were amongst the large crowds who gathered at Bankstown Airport recently for the **Gala Day of Aviation**. There were displays including the newly-restored Lockheed Super Constellation VH-EAG, Lockheed Hercules C130 transports from the RAAF, a number of vintage Warbird aircraft, the Royal Flying Doctor, and the NSW Police Airwing.

The Super Constellation was not actually flying, but was on static display only. However, there were many aircraft on which to take a short flight, including a range of Douglas Dakotas from Dakota National Air. There was lots of activity to monitor on 132.8, 123.6 and 119.9 MHz, and of course the ATIS was on 120.9 as usual. Company activity was alive on 128.9 and 123.45 MHz ('numbers').

Keep your ears open for any information that may come to light about similar 'Gala Days' or Airshows in your local area. And if you hear about such an upcoming event, go see your local airport manager, or the organisers of the event, and simply *ask* for their radio frequencies they intend to use. Amazingly, they will probably tell you outright, just like that. Why beat around the bush? You never get if you do not ask!

Some more good information to finish up this month's column. Hot off the presses (so to speak) is Ansett's list of its company HF frequencies for LDOC purposes: 4630, 5240, 7965, 11,021, 14,890, 17,532, 20,052 and 23,913 kHz.

That exclusive information courtesy of my in-house Ansett 'mole' (code-named 'Whiskey'), buried deep within their corporate corridors. Well, it's once again time to put the magazine down and turn on the receivers, so you can put the information imparted to some use. See you again in February.

If you need assistance with frequencies to monitor and terminology used on the air, or explanations of how to go about monitoring satellites, ACARS digital datalink mode, or numerous other areas of airband interest, write for my book 'Climb into the Cockpit by Radio' to Airband Communications, PO Box 16 Georges Hall NSW 2198. Price is $22.95 including post to anywhere in Australia.

Gone Tropo

from Chris Davis, VK1DO

The enormous faith placed in commercial 'brick' amplifiers was brought into question, somewhat pointedly, during a recent review of various manufacturer's bricks in the American magazine QST.

The power outputs claimed by the various firms were certainly able to be met, however, the distortion products were nothing to be proud of. Much more disappointing was the pretty lack-lustre noise figures that these 144MHz bricks returned versus some pretty optimistic claims.

On the distortion front, the third order products — which is the most obvious shortcoming likely to affect your social acceptability in a fairly well populated district — fell far short of impressive. More importantly, what is forgotten, outside of an integrated system with the ideal design luxuries like negative feedback and some consistent and reliable level control, these distortion figures are the best case scenario.

Without too much carelessness on the operators part, ie slight overdrive of a brick and perhaps a power supply that is copping pretty much its full load, and thus lacking ideal regulation, the overall performance of such an amplifier falls to as low as, third order distortion being only some 20db down. Before you take umbrage at being asked to contemplate a decibel figure, let's just put this into plain, practical English. If you are running a brick capable of, say, 100 watts output, then the figure of -20dB represents a whole one watt of power spreading out on either side of your signal.

In terms of social impact, in a city the size of Canberra, one watt will permit you to work at strength five or so, every other operator in town even with your beam antennas facing away from each other. If you think that it is unlikely that your brick heads toward such poor performance, do some thorough tests with the locals.

Beware of the role of a noise blanker in making a signal appear to be wider than it is. The noise blanker looks at the wider bandwidth of a receiver and can give misleading results as it gets tricked by the presence of the genuine signal.

The unfortunate delusion that amateurs suffer, without the benefit of carefully matched and integrated systems, is the tendency to throw it all together and drive it as hard and for as long as the gear will permit.

I am amazed at the number of people who constantly blow up output transistors. They are usually quite conservatively rated in terms of dissipation, but the killer is overdrive. The base-emitter junction is still the limiting factor and a revved up driver is sure to wipe the smile off the fact of an output transistor that is always at its limit.

> ***"...a total of 90 amps from what supply? A trusty car battery. Regulated? Well, no..."***

To reiterate a point made in previous columns: the likely linear, reliable output power of a solid state amplifier is roughly only just half of its carrier power and often less.

Sadly, although the output meter keeps going up, the power will not actually be going out on the designated operating frequency and therefore, with a certain amount of power to begin, if it starts to take the form of distortion and broadness of signal, then it

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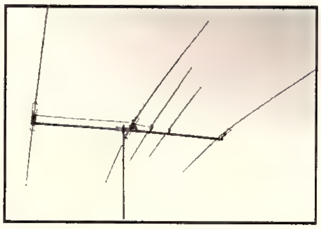

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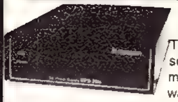
TE-14 4-band rotatable dipole.......**$325**

EMTRON power supplie

EPS-20s

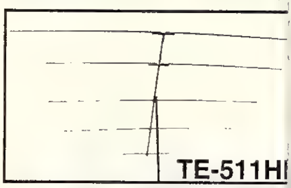


The new Emtron **EPS-20S** is the sophisticated 20 amp switch-mode power supply you have been waiting for. **EPS-20S** fully utilises the advantages of switch mode technology: high power in a small, light weight case. Tests proved that the noise and interference from **EPS-20S** is well below specifications for the most demanding radio communication operator. **EPS-20S** can be used with any 100W transceiver. **$295**

TE-34 3-ele beam on 14-21-28M
1-ele on 7MHz............................**$7**
TE-44 4-ele beam on 14-21-28M
1-ele on 7MHz............................**$9**

27MHz CB beam a
-the dual drive syste

TE-311HB 3-element beam $
TE-511HB 5-element beam $



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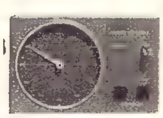

Gone Tropo

from Chris Davis, VK1DO

must be usurping power from where we want it.

Just because turning up the mic gain or drive level makes the meter move higher or the signal sound louder, by sounding more harsh, it doesn't translate to more copyability at the other end. Set the system up with care and trust the facts of the matter. If its no longer linear, then it cannot get any louder.

Bear in mind also, many rigs driving these bricks are by no means ideal in their own spectral cleanliness, so driving them to a level, well within their capacity ought to start things off on a better footing.

The specs which were claimed, I might add, are by no means surprising for 13.8 volts applications. The beauty of MOSFET output stages, is not just their different characteristics compared with bipolars but the opportunity to run rail voltages that are two and three times higher than the cheaper bipolars. Thus, the currents can be reduced by an equivalent amount in the opposite direction. One of the commercial amplifiers which employs four output transistors as well as another to drive them, claims 400 watts output. Assuming a 40 to 50 per cent efficiency — and that is optimistic — the total current into the device needs to be around 72 amperes. Bear in mind, to drive the outputs to this level the driver needs to produce 100 watts, by itself.

That's about another 18 amperes just to get the show on the road. A total of 90 amperes from *what* power supply? A trusty car battery. Regulated of course? Well, no.

> ***"...if you're running 100 watts a watt of power is spreading out on either side of your signal..."***

Don't kid yourself about the capacity of a lead acid accumulator. It might be able to deliver up to a couple of hundred amperes to drive a starter motor on a cold morning, but don't expect the operating voltage to remain anywhere near 12 volts, let alone 13.8. Car manufacturers incorporated all sorts of tricks to cope with the likely low battery voltage during cranking. For a start, the starter motor is capable of putting up with very much below the ideal 12 volts and still be turning. The coils in many cars were often 6 volt coils fed by a ballast resistor that dropped the voltage during normal operation but was bypassed in the starter/ignition switch to guarantee a reasonable level of spark during cold, slow cranking.

Soon, I would hope, particularly for home use, we will see some MOSFET, higher voltage bricks with integrated power supply and requiring sensibly low drive levels and some intrinsic negative feedback and rigorous gain control.

Some people might suggest that we all resort to valves but under the legal limit there is still an excellent role able to played by well-engineered and well-conceived solid state amplifier systems. Some of the observations and most salient points in relation to the pre-amplifiers, incorporated in commercial bricks will be covered next month. Meanwhile, don't despair on buying or employing a commercial brick but be aware of their limitations, the engineering approach required to use them to their linear capacity and the importance of rock solid power supplies.

)MATIC ANTENNA TUNER **SG-230**

Whether you are a **HAM, LAND MOBILE, MARINE or AIR BAND** operator, you need an efficient antenna coupler. The best on the market today is definitely the SG-230 made in USA by SGC, Inc. The SG-230 is a fully automatic antenna tuner, with) feature, where a computer system continuously monitors ɜnna parameters and instantly selects the right values from han half a million combinations in its matching circuit to sure everything is perfectly tuned. With 500 position non- memory build in, and a memory management program, s only one word for **SG-230 HF AUTOMATIC ANTENNA LER - RELIABILITY !** **PRICE $850**

ITAL COMMUNICATIONS

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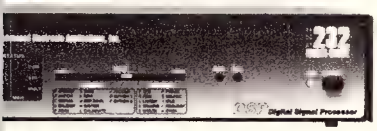

DSP-232

2, the plug and play Mode Warrior is AEA's new state-of-the- mode data controller. Digital signal processing provides the ring available.There is no doubt today that the DSP-232 is **Dual Switchable Port DSP Multy-Mode Data Controller**

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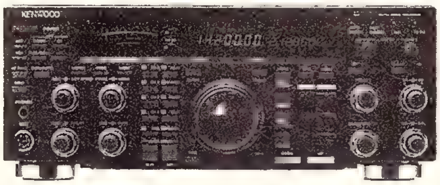

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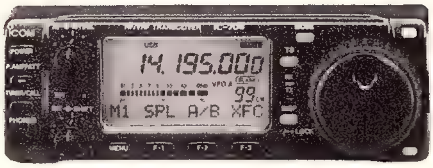

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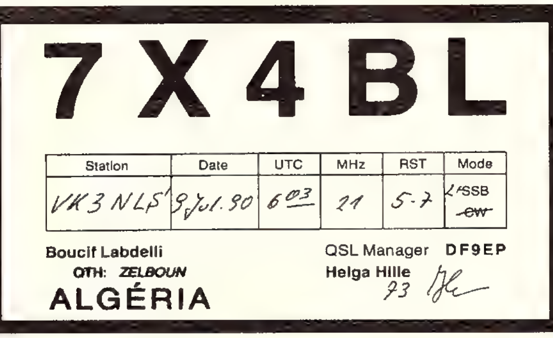

7X4BL

Station	Date	UTC	MHz	RST	Mode
VK3NLS	9 Jul. 90	6 03	21	5-7	✓SSB ~~cw~~

Boucif Labdelli
QTH: ZELBOUN
ALGÉRIA

QSL Manager DF9EP
Helga Hille
73

ALL THE DX

Compiled by
Len Shaw, VK3ALS
email to
shawlen@werple.mira.net.au

The following information was obtained from a number of sources, including the Shortwave Possums BBS with on-board credit to OPDX/BARF80 (Ohio/Penn DX Bulletin) with thanks to the ARRL, Northern Ohio Amateur Radio Society, Northern Ohio DX Association, Ohio/Penn Packet Cluster Network, K4CEF and South-eastern Cluster Group, DJ5JH, DJ0WO G0GWA, Z32GX, KN4F, AH6MM, KQ8M, KB8NW, KL7A and WB9OTX. It has been edited to omit specific USA-only interest. R&C wants to supply the best and latest DX information available (as we believe we already do, thanks to Jim Smith, VK9NS!). We welcome regular input from VK and ZL stations, particularly from net controllers on a basis of heard/worked. Please fax Len Shaw, VK3ALS on (03) 9775 2575 (during business hours) to have your info included in this section.

HK0, Serrana Bank (Colombia)

Pedro, HK3JJH, was to be active from here late November but had to postpone this operation because of bad weather. Next possible operation from IOTA NA-133 may be either December 22 or during January 1997. Pedro may also activate Roncador Key (NA-133) and Serranilla Bank (NA-132) during this same time frame. All of these operations are reportedly scheduled to last only six to eight hours.

JW, Svalbard

The 'DX News Sheet' reports that Mathias, JW5NM, is very active on 160 metres, between 1820 and 1825 kHz. He hears JAs between 2105-2125z and the USA West Coast and KH6 at 0630z. He will be active for the CQWW CW Contest. QSL via LA5NM.

JD, Ogasawara

(Chichi Island, IOTA AS-031)

JA operators will be active from here December 23-25. Look for JA4GXS/JD1, JF4LNO/JD1 (a YL) and JN4AWW/JD1 to be active on 160-10 metres SSB/CW. QSL via JA4GXS.

Meanwhile, 'QRZ DX' reports JA8FCG will join Eiji, JQ1SUO, in operating from here December 16 through January 3.

Both will sign home call/JD1. They plan to be active on all bands CW and SSB. QSL via respective home call.

JT, Mongolia

Sur, JT1BH, in Ulan Baatar, was heard late November on 20 metres (14,008 kHz between 0900 and 1000z), 40 metres (7004 and 7007 kHz between 1051 and 1343z) and 80 metres (3505 kHz around 1415z). No QSL info is available at this time.

Meanwhile, 'The DX Bulletin' states Mike, NI7T, will be active during December as JT1FBT. His activity will be between 0000 and 1200z on 160-10 metres. QSL via CBA.

J6, St Lucia

Dominique, F5RYC, will once again be active from here during December. Look for J28YC.

T9, Bosnia-Herzegovina

Dave, T9/WA5IKQ, is located in Camp McGovern as the AT&T site engineer. He's not far from the city of Brcko, Bosnia north of Tuzla. He is active on the SSB and CW, mostly on 80-20 metres. Dave's logs have been arriving at his QSL Manager's QTH (KH6BZF via CBA). Please SASE or SAE + IRCs for returns. Please no bureau QSLs.

Suriname

Mako's (JA1OEM) trip to Suriname (PZ) and French Guiana (FY) will be staying in these areas for a period of about two months starting from November 19. Planned callsigns to be used during his stay are PZ1HP and FY/JA1OEM.

ZD7, St Helena

The 'DX News Sheet' reports Johnny, ZD7WRG, will be active for the next few months on 80 and 40 metres. He is active daily at 1830z on 14,240 and 21,355 kHz to make LF band skeds. QSL via WA2JUN.

3DA0NX: NEW route for direct QSLs: Koji Tahara, Embassy of Japan, PO Box 11434, Hatfield, Pretoria 0083 South Africa *or* via the ZS (ZS6CAX) or JA (JM1CAX) bureau.
3V8BB: Marienstrasse 20a, D-38104 Braunschweig, Germany ($US2 or 1 IRC)
4K70DWZ: Box 116, Ktoprak, 81031 Azerbaijan
6Y6A: Mas Kozu, Box 8202, CSO Kingston, Jamaica
A45ZN: Tony Selmes, PO Box 981, Muscat 113, Oman
HS0AC: Jack Fleming, PO Box 581, Seattle, Washington 98111, USA
J6DX: Scott Lehman, PO Box 803, Greenville, Ohio 45331, USA w/ SASE or via Buro
OH2BH: Martti Laine, Nuottaniementie 3D20, 02230 Espoo, FINLAND
T88T: Belau DXpedition, PO Box 88, Morris, Oklahoma, USA 74445-0088
ZF2RF: K4UVT, PO Box 231,240, Montgomery, Alabama 36123-1240, USA

S7, Seychelles

Paddy, S79MAD, can often be found with Randy, WX5L, at 1300z on Sundays on 14,086 kHz (RTTY list operation). QSL via GW4WVO.

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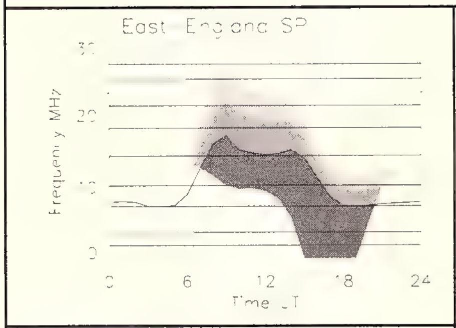
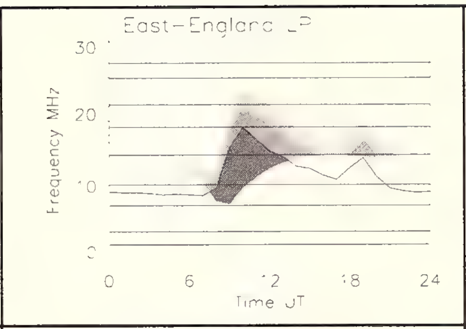

East–England SP


East–England LP

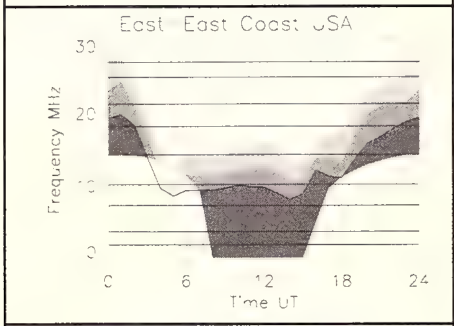
ABOUT THESE CHARTS

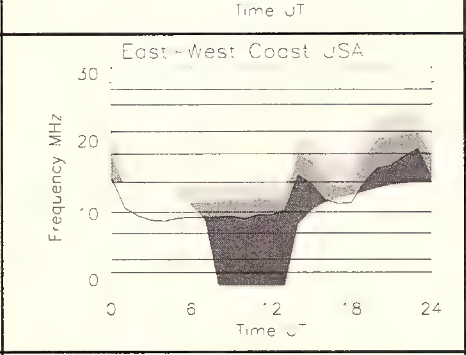
The data on these pages are graphs showing forecasts for expected HF operating conditions between Australia and a number of important DX destinations. The information they contain is prepared by **IPS Radio and Space Services**, a division of the federal Department of Administration Services. IPS monitors changing radio conditions — which are affected most greatly by fairly predictable changes in solar activity — and issues reports and warnings based on that data.

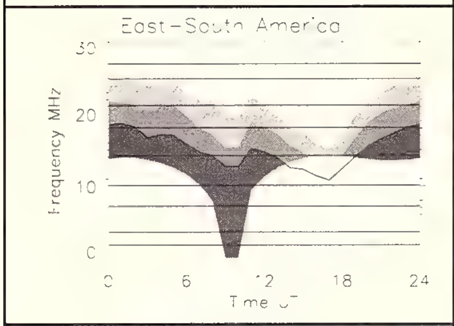
Stations in the eastern half of Australia should refer to graphs on the left hand page. The data on the right hand page is calculated for stations in the western half of the continent. Of course, if your location is in the middle of the continent try reading them *both*... then make an educated guess.

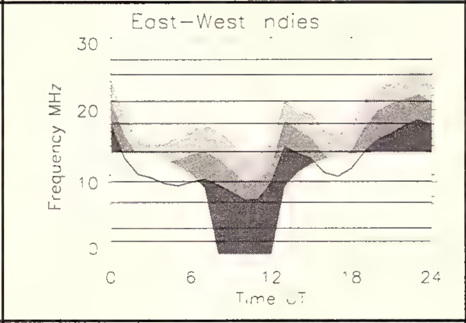
The horizontal axis of each graph represents the hour of the day expressed in Universal Co-ordinated Time or UTC ('z'). The vertical axis shows the entire HF spectrum with a horizontal line representing each HF amateur band.

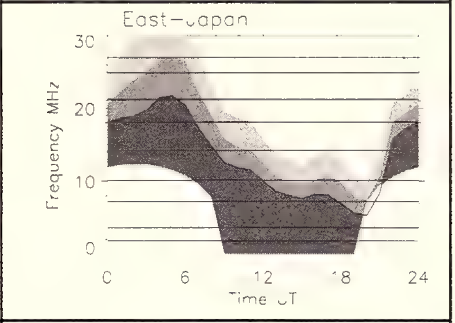
The maps are easy to read. First go to the map which looks closest to the area in which you are interested. Look *up* from the time and *across* from the frequency to the point at which the two variables merge. Note which grey scale — if any — appears at the intersection of the particular time and frequency combination for that area and refer to the legend (right) to find the sort of propagation most likely to apply. If the space is blank the forecast is not good — your time and frequency combination is unlikely to allow communication to the destination station.

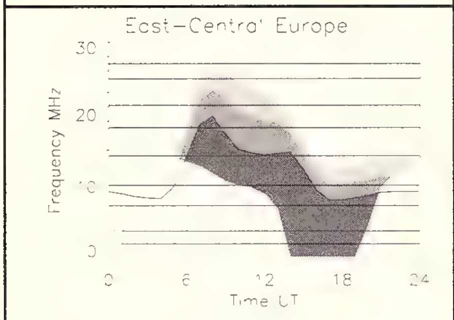

East–East Coast USA

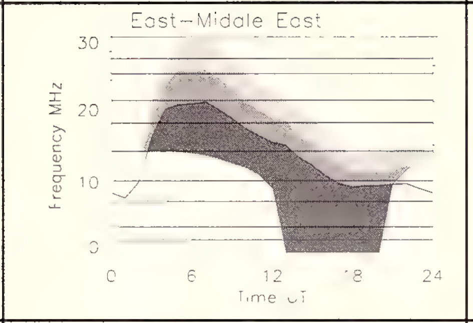

East–West Coast USA

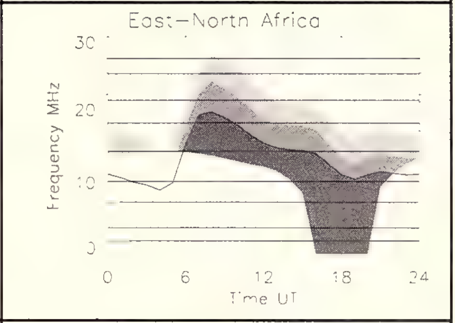

East–South America

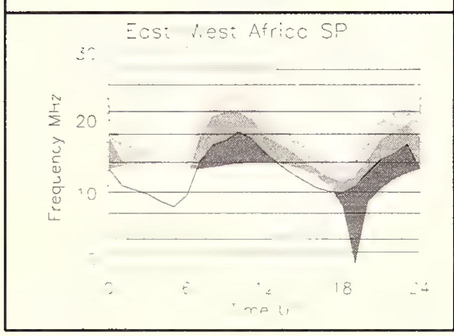

East–West Indies

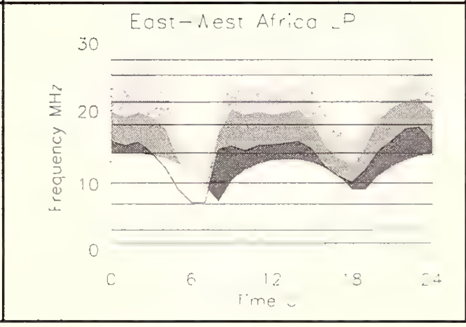

East–Japan

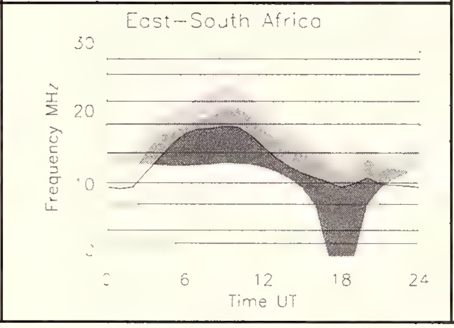

East–Central Europe


East–Middle East


East–North Africa


East–West Africa SP

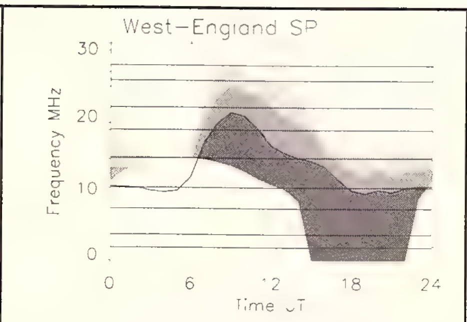

East–West Africa LP

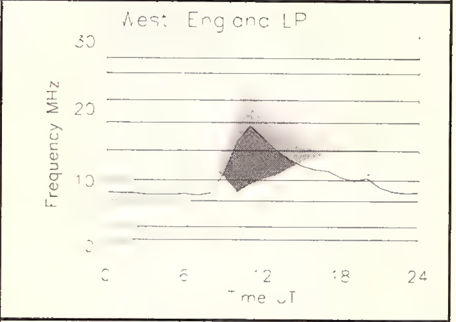

East–South Africa

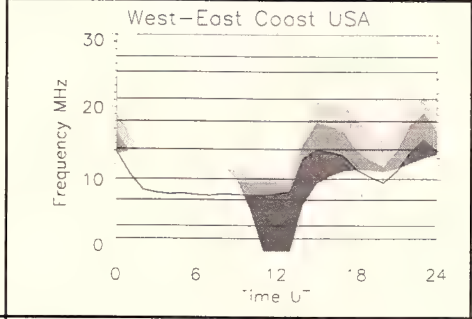
er Jan 1997

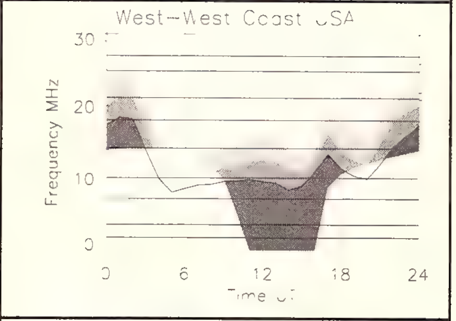
LEGEND

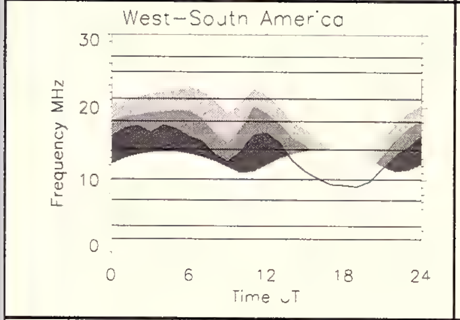
▨	**UD**	Upper Decile — You have a 10% chance of getting through.
▨	**MUF**	Maximum Usable Frequency. 50% chance to get through.
▨	**OWF**	Optimum Working Frequency. 90% chance of a contact.
■	**EMU**	E-layer Maximum Working Frequency.
☐	**ALF**	Absorption Limiting Frequency. Lower limit of the usable band.

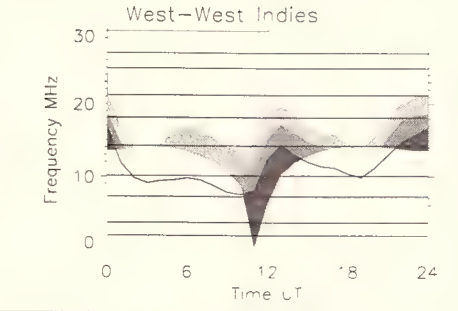


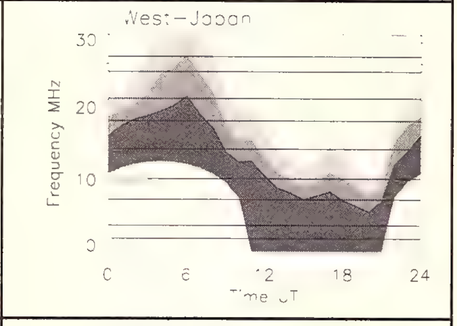


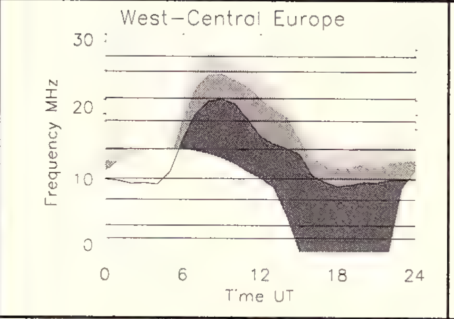


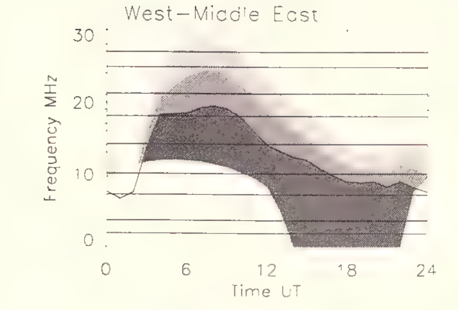


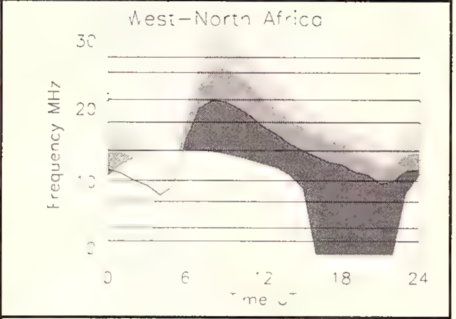


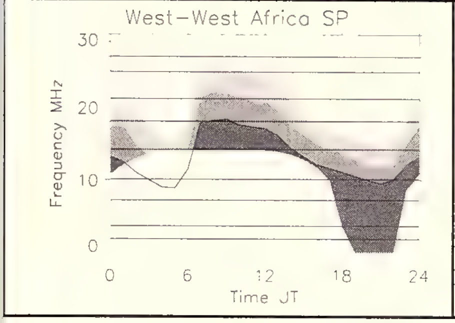


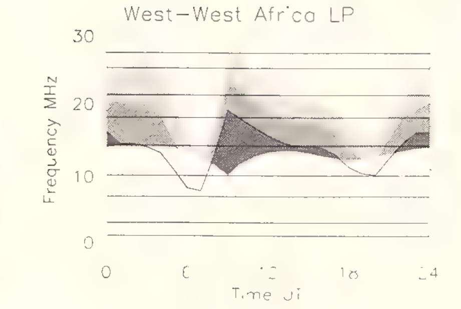


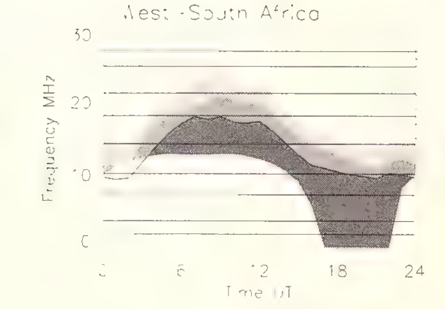












AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

Trevor Colwell reports on the latest from ACBRO

Meeting Decorum

Most clubs, whether CB or any other kind, have the need for meetings on a regular basis, and these may be for the organisation's committee or perhaps a general meeting to which members are encouraged to attend. Some of ACBRO's affiliated clubs indicate in their correspondence and news-letters that members in some cases are very apathetic in making an effort to attend such meetings to which they are entitled to do so.

Many of the clubs combine the necessary meeting with some other event such as a BBQ or Christmas party to hopefully swell the attendance to the meeting which otherwise may have been poorly attended.

The question may be raised as to why we, the mortals of this earth, whether having been touched by the CB bug or are mere citizens, seem to have no great desire to attend meetings, particularly when they are of a business nature. The need for meetings to conduct the general business of club's affairs however is a necessary evil in this world, and for clubs incorporated under state laws, it is a legal requirement, even if only to conduct an annual general meeting of members.

So whatever the case, clubs are wise to create an incentive for members to be a part of the event, but probably, the members should take more responsibility to honour their membership by making an effort to attend such meetings or at least tender an apology if circumstances dictate that this is impossible.

ACBRO's meeting problems are further compounded due to its position and the membership base. Firstly, being incorporated, it is obliged to have meetings as well as needing to attend to the matters arising as they do. But most of its members are scattered around Australia, making it impossible for them to attend. So the regular 'locals' can be the only ones expected to appear regardless of any incentive that may have been offered, and the on-going problem of building up attendances, will always be their challenge.

It occurred to one of the ACBRO office bearers recently, that this large group of people who could not realistically attend meetings, may wonder exactly what goes on at these affairs. Does the ACBRO committee meet and formulate a scene as observed on television when the parliament is sitting, or is there a different scenario which could be conjured up knowing of how some conduct on the air-ways leaves something to be desired? So an approach was made to a recent member visitor at a committee meeting, with the request that he briefly describe in a few paragraphs, his impressions which could be shared with others who may in fact have pondered the point.

So his response follows:

"Attendance at a Committee Meeting By ACBRO 402 Dennis

"As a new member to ACBRO, I wanted to know more about this club, and because of other commitments I was unable to attend the AGM, and that attendance to a committee meeting would enable me to broaden my knowledge and also sight some of those speakers that are heard regular on Tuesday nights.

"Well, if you've never been to the AGM or a committee meeting before and have never had anyone take you to a WIA meeting, it would be an experience to find the room where the meetings are held. Luckily for me, I went with a member, Ron 395, who is on the ACBRO committee. All the gates were shut, but he assured me that the little gate would be open.

"I was greeted at the door by Trevor, as I had spoken earlier to him of my attendance to the meeting. Trevor then introduced me to other committee members in attendance, these being Ted, John, David, Keith and later to Wayne, Keith and Pas. It was great to actually put faces to the voices that I had heard over the last couple of months.

I have been to numerous committee meetings as a member of council for a club for 12 years. But I was in for a treat...

"Don't get me wrong. There was no table thumping, yelling across the table, swearing, heated agreements or leaving the room in disgust as I was accustomed to. It was a very relaxed and friendly atmosphere, started on time and was run very democratically. You can also help yourself to a tea or coffee during the meeting.

"There was the normal agenda... welcome by the Chairperson, apologies, minutes from the previous meeting, treasures report, correspondence in and out and so on. All necessary topics for running an orderly committee meeting.

"During general business there was a break for tea, coffee, biscuits and cake and a chat to members. After the break it was back into the discussions for our committee to ponder on things like CTCSS in the CBRS, 20 years of CB and new chums into CB.

"It was a long committee meeting but one that I thought as being worthwhile (I have sat through longer and never saw much achieved). I was glad that I was able to attend, and would urge all members to give their committee members support by being in the gallery at one time or another. You may even get to sit at the table with the other committee members as I did.

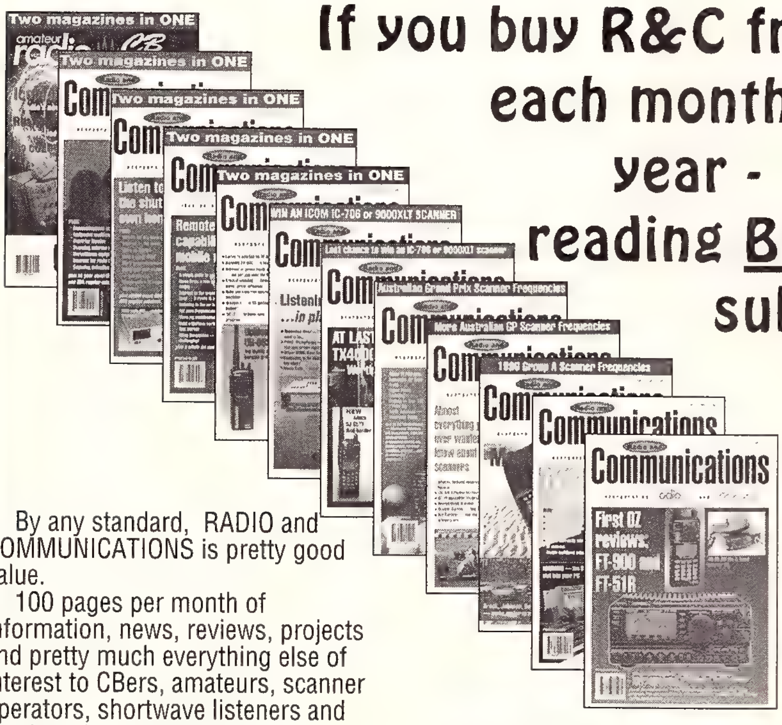
"You'll never know if you'll never go along to an AGM or committee meeting — be involved, it's your club."

Dennis's summary of the meeting is typical of what is the 'norm', and it appears that the relaxed atmosphere which is created by good organisation impressed him, having experienced the alternative as perhaps have most. And it is the thought of table thumping and the debating dogma and arguments that could put people off going out of their way to attend any form of meeting, and class such visits as a waste of time.

In perusing the minutes from ACBRO'S meeting in any 12-month period, it would be rarely found that any issue debated was not passed unanimously by those present. This is brought about by relaxed discussion on all issues with all who would wish to have an adequate say until all points of argument had been canvassed to reach such a resolve.

The Chairman's part in the conduct of these meetings is also important, and ACBRO has been well-blessed over recent years in this regard to have someone who is tolerant in imposing the simple procedures that have a proven record, and render the need for 'points of order' to be unnecessary.

By all means, Dennis, and other members, feel free to make another visit to any meeting; and whether you share a seat at the table or in the visitor's gallery, the coffee and 'bikkies' will always be available. Actually, they become an important tool in maintaining the unique form of 'meeting decorum' when the committee sits!



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Radio and Communications

Incorporating AMATEUR RADIO ACTION and CB ACTION

Amateurs, CBers and hobby communicators of all kinds are invited to place a FREE classified in this section of the magazine. Amateur gear, CB radios, scanners, antennas, computers, wanted or for sale items, power supplies... it's all fair game. Note our policy, however, that readers who do not hold an amateur qualification may not advertise to purchase amateur transmitting equipment. So dust off that old relic and get busy with the biro. Your first 25 words are FREE, then it's just $4 per 25 words after that. Adverts must be clearly PRINTED. Please read and note the conditions below.

Readers of **RADIO and COMMUNICATIONS** may use the **CLASSIFIEDS** column to the extent of 25 words absolutely free! This offer applies only to private "For Sale" or "Wanted" classified listings, and to computers, software or computer peripherals and other hobby communications equipment — scanners, amateur or CB transceivers, etc.

A **limit of one classified** advertisement applies to each advertiser. Any additional words must be paid for or the advertisement will not be accepted. A nominal fee of $4 per additional 25 words or part thereof will apply. This fee should accompany your material if applicable. Please enclose this fee or your advertisement will not appear. Preference is given to paid advertisements, and we receive an awful lot of them each month...

Your advertisement's **inclusion cannot be guaranteed**, but every effort will be made to place your advertisement in the issue following receipt of copy. The 25 words **must include your name and phone number.**

The publisher reserves the right to amend or reject any advertising material considered unsuitable for publication. No correspondence will be entered into. DO NOT SEND TWO FORMS. ONLY ONE WILL BE RUN!

Repeat CLASSIFIEDS advertisements will be accepted for a fee of $4 for every 25 words — *including* the first 25. Once again, this fee should accompany your material.

Advertisements for **commercial goods or services** will not be accepted for publication in these classifieds pages. This classified section is for **private sales/purchases** only.

For details of display advertising elsewhere in the magazine phone our advertising manager, Kate Shaw, on (03) 9752 6186

Readers should note that all advertisements are required to comply with the provisions of the Victorian Consumer Affairs Act of 1972. They should be aware that, under the above Act, Post Office box numbers can be published **only if the full name and residential address** of the box holder is supplied with the advertising material.

This form is to be used for all classified advertising material in **RADIO and COMMUNICATIONS**. Letters on plain paper requesting the insertion of a classified advertisement will not be accepted.

Telephone inquiries (for Classified adverts only): (03) 9722 9666

Clip this form and post it complete to:
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Wonga Park,
Victoria 3115

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IMPORTANT NOTICE: Unsuitable material includes advertisements for wanted amateur transmitting equipment where no valid amateur call sign is shown, 'for sale' equipment modified for general coverage transmit, etc.

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February issue deadline: 10 January, 1997

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ll classified advertising copy is typed in by a non-amateur typist who, reasonably enough, cannot decode illegible writing. In short, she types what she sees, and if your writing is poor you can expect either crucial errors, or the non-appearance of the advert. PLEASE ENSURE THAT YOUR CLASSIFIED IS LEGIBLE. ALTHOUGH YOU KNOW WHAT YOU'RE ADVERTISING A TYPIST DOESN'T!

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The acceptance of classified advertisements in the ***Radio and Communications*** *classified advertising section does not warrant in any way that the goods offered are available, free of any encumbrance, in working order or otherwise satisfactory. The purchase of goods by private sale does not offer the purchaser any protection under law, and buyers should be certain the goods under consideration are suitable for the purpose for which they are required. Radio and Communications cannot accept any responsibility for goods advertised in the classified pages and no correspondence will be entered into regarding such goods.*

The onus is on you...

VK1 AREA

Test gear: Hewlett ackard Klystron PS-715A 175. Sig gen 606A-65MHz 495. RF millivolt 411A 265, also model 3406A 325. RF power model 430c ith bolo 477B or X487B 275. Model 431C with Bolo 78B or X478A $375. Sig en 612A 450-1230MHz 525. Also military version S-418 400-1000MHz 0VAC. AVO-8 $64. AVO $85. HP-3476B & HP-265A digital multimeter 5. Peter, VK1CPK (06) 231 90

VK2 AREA

Antennas Yagi, duobaner 10/15m with Kenpro 0RC rotor 9m mast $300 uyer to remove. AEA opole $150. Both GC. eith, VK2GNT (02) 9874 16

Deceased Estate VK2PET. **enwood** TS-830S HF xcvr ith SM-200 monitor, AT-0 tuner, STI base stand, tt tester, base stand and rris CB. Grant (02) 9969 46. Transmitting gear ld to licensed amateurs ly.

com IC-25A 2M mobile vr, 1 owner, low miles, fers invited or swap for . Steve, VK2ZP (06) 227 59. Licensed amateurs ly.

RC auto ant tuner model G-230 for JST-135, JST-5, JST-245 with 20m con-l cable, manual orig car-n, top cond $600. Ken, 2IY Fax (02) 9310 0504

enwood TM-241A 2m W xcvr, like new with ic, manual & box. Used ly few months for packet, ig cond $400 by hand ly. Ken VK2IAZ (02) 9313 30 B/H. Licensed amaurs only.

enwood TR-7400A 2m xcvr with mobile anten- in VGWO $350. Chris, 2GCT (02) 9681 5772. Licensed amateurs only.

- **Kenwood** TS-520S HF xcvr with MC-50 mic & 2 spare sets of finals plus Kenwood AT-120 ATU, both in EC $700 ono, or will sep. Greg, VK2PYU (066) 54 4070. Licensed amateurs only.
- **Kenwood** TS-711B 70cm all-mode, as new cond $1100. **Kenwood** TS-700SP digital rdout all-mode 2m $650. **Uniden** HR-2510 all-mode 10m $400. **Kantronics** KPC-3 32K version 6 latest, new, not going into packet. All items incl h/books, circuits, boxes, all radios are in top cond. All items as priced ono. VK2TBW (048) 61 2092. Transmitting gear sold to licensed amateurs only.
- **Kenwood** TS-870S DSP, new in carton with complete paperwork $3000. Peter, VK2FFA (043) 244 160
- **Magazines**: *Amateur Radio* & *QST* early '60s & others. John, (02) 9525 8901
- **PC**s XT/AT 20MB/HD $20; graphics tablets $5; stepper motors $2; 1.2MB/1.44MB drives $10; 2400BPS modems $5; power supplies $5. Much more. Rodney VK2KWN (02) 9634 5897
- **TET** HB-35C 5-el tribander with KR-400 rotator, 3-legged galv windmill tower, 21ft, plus 20ft x 2inch centre tube all EC $950 the lot. Andre, VK2FLY (063) 62 5123
- **Wanted**: Astatic T-UG8-D104 mic Silver Eagle or equiv, no modded versions, must be orig. **Also** 6146B or W & 12BY7A valves, new. Ian, VK2PKB (049) 32 8935
- **Wanted**: I need a relatively cheap but good light duty rotator for a 12-el 2m Yagi. Willing to pay up to $75. Rob, VK2PRL (048) 84 4213
- **Yaesu** FT-11R 2m HT incl extras: mobile chrgr, mic, leather pouch & AC chrgr. $600 the lot. Gary, VK2NOV (065) 84 3978. Licensed amateurs only.

QSL CARD COLLECTION

Please make donations of amateur QSL cards to the WIA QSL collection and save something for the future. If you are helping a silent key estate, please contact Ken Matchett, VK3TL, 4 Sunrise Hill Road, Montrose 3765, or phone (03) 9728 5350. Arrangements can be made for large quantities of cards. Can you spare a few?

VK3 AREA

- **Kenwood** TR-751A 2m multi-mode xcvr $500. **Icom** IC-505 6m SSB / CW / FM xcvr $400. **Uniden** HTX-100 10M xcvr $175. **Motorola** sig gen $100. **Icom** IC-2SAT 2M FM HT with desktop chrgr $250. Gavin, VK3HY (03) 9761 1104. Transmitting gear sold to licensed amateurs only.
- **Kenwood** TS-430S HF xcvr with FM board, wide AM filter $950. **Yaesu** FT-7 HF xcvr $380. **Marconi** mod meter TF-2300 $650. **Commodore** Amiga-500 with sftwre, accss, mono monitor $130. **Nally** tower 14m $650. **Arlec** line cond 500 VA 240V $550. **Isolation** transformer 240V/100VA $12. **Amstrad** 2286/40 12MHz 40MB hard drive, kybrd, mouse, 3.5" floppy, no monitor $120. **CGA** monitor $50. **AWA** RT-80 suit 2m packet $50. Lee, VK3GK (03) 9544 7368 or 015 81 0101. Transmitting gear sold to licensed amateurs only.
- **Kenwood** TS-50S compact HF xcvr with matching AT-50 ATU, narrow CW filter. Suit new equip buyer looking for discount on new price. Less than 24hrs use $1650. **Also** Ten-Tec Argonaut 509 QRP HF rig with digital readout & narrow CW filtering with hndbk. Great portable QRP SSB/CW xcvr $295 ono.

... ☞

Please note that all phone numbers are AFTER HOURS unless otherwise noted.

Bob, VK3EL (03) 9481 5003. Licensed amateurs only.

- **Kenwood** TS-950SD top-shelf HF xcvr with box & manual $3500. **Yaesu** FT-470 dual-band HT with chrgr, two batts, book & case $450. **Antenna**: duobander 15-10m 6-el $175. **Towers** free standing, two at 55ft $300ea. **AEA** PK-64 all-mode TNC $80. Ron, VK3EF (03) 5446 1886
- **Standard** C558 dual-band HT. Wide rcve on both bands. With NiCd pack and CWC150 NiCd charger, CTN-160 tone squelch board. 12 mths old. New $1400, sell $750 or offer. EC. **Yaesu** FT-2400H Mil-spec 2M mobile FM xcvr. Very tough rig. With orig box, mob mtg brkt, all cables & manual. New $700, sell $425 ono. EC. (018) 54 0154 any time. Licensed amateurs only.
- **Wanted**: 3inch (yes you read correctly) compact floppy discs (CF-2) to suit Amstrad PCW 8256. The sales assistant just laughs, but our club computer lives on. Can anyone help our "dinosaur"? All costs paid, plus everlasting gratitude. Mark, VK3PDG (054) 47 9138 or 015 84 4063

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Australia's most active radio listener club is ready for you!

SPUD is a non-profit club that caters to all forms of radio!

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Join a monthly meeting in Melbourne, Sydney or Adelaide to exchange info and have a ball!

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PO Box 293,
Coburg, VIC 3058

Lucio (03) 9354 5645
Steve (08) 8295 5923
Alex (02) 30 5291

SWL CLUB

Australia's best shortwave & scanner listeners club. 16-page club magazine, 11 issues per year.
Write to **Southern Cross DX Club**,
GPO Box 1487, Adelaide, SA 5001.
Sample *DX Post* magazine free.

- **Wanted**: Handbook for Pye Cambridge AM10D & FM10D (two books). David (03) 5277 2161
- **Wanted**: Kenwood MC-60A or MC-80 8-pin desk mics. Bob, VK3PT (054) 39 6314
- **Wanted**: manual for Heathkit monitorscope model SB-610. Lawrie, VK3DFE (03) 9807 3995
- **Wanted**: multi-mode TNC with all info & connect leads. Neil, VK3QX (03) 5428 3527 or write PO Box 217, Gisborne, Vic 3437
- **Wanted**: Redco FC-3 freq counter will pay good price & freight. Bob, (053) 91 1890
- **Wanted**: Tower 2 sections up to 10m. Tole, VK3WC (0419) 30 5093
- **Wanted**: Yaesu FT-1000 top-spec xcvr, must be PC please. Jack, VK3TJS (058) 31 3640
- **Wanted**: Yaesu FT-2311R 23cm xcvr. Colin, VK3CLS (03) 9546 6297
- **Yaesu** FP-707 power supply 20amp $240. **Yaesu** MD-1 dynamic desk mic $120. **Cobra** CA-72 desk mic $65. American Electronic desk mic $65. **MFJ**-901B antenna tuner $80. CB Scorpion base station 40ch $150, all items in PC. Rosebud. Lloyd, VK3HLD (03) 5986 5082
- **Yaesu** FT-101B HF xcvr with CW filt, pwr filt, processor, VFO FV-101 VGC, new final tubes, 200W o/p $490. Tole, VK3WC (0414) 933 4740 or fax (03) 9399 1937. Licensed amateurs only.
- **Yaesu** FT-7B mobile HF xcvr 80-10m 100W SSB/AM $375. Les, VK3PGL (053) 35 7762. Licensed amateurs only.
- **Yaesu** FT-901DM HF xcvr $670. Tole, VK3WC (0419) 30 5093. Licensed amateurs only.
- **Yaesu** YO-100 monitorscope as new cond, manual $240. **Werner Wulf** monoband Yagi CB/10M, new $80. **CP** monitors, green / orange display 29cm $50. VGC. Harry, VK3AXJ (03) 9802 5704

VK4 AREA

- **Emtron** TE-43 beam antenna 4el 10-15-20 $575 or *swap* for HF rig with cash adjustment. VK4AE (07) 5491 8997
- **Hustler** set of 5 mobile HF whips plus mount & spring also 30m comm whip GC $100 the lot. Mike, (07) 3284 7739
- **Kenwood** RC-10 remote controller $175. **Philips** FM-828 tuned on 2m with xtals $95. **Antenna**: 2m 8el Yagi $65. **Also** 14inch colour monitor (takes RGB & composite video) $125. Mark, VK3TCD/4 (014) 98 2586. Transmitting gear sold to licensed amateurs only.
- **Kenwood** TH-22AT 2m HT with DTMF, DTSS paging, PB-34 batt 9.6V 600MA, rapid KSC-14A chrgr, DSE 30W 2m amp, 7dB gain antenna, $750 the lot. VK4CMS (07) 3349 1747 anytime
- **Kenwood** TS-430S HF xcvr with wide rx, 200W PEP, GC, orig pckg $1000. Phil, VK4KEV (07) 3396 8376. Licensed amateurs only.
- **Philips** high-band VHF PRM-80 146-175MHz, some amateur freqs progrmmed $400. Norm, VK4ANB (074) 63 1221. Licensed amateurs only.
- **Shack clearout**: Yaes
FT-890 HF xcvr with Yaes
FL-2100Z linear amp, PC
view working $2200. Yaes
FT-411 2m HT, VGC $40
Ranger RCI-2950 10M al
mode xcvr $450. Jo
VK4MMM (074) 98 6969
- **Uniden** 'President' HF
2510 10m xcvr. Digital rea
out, all modes, 15w outpu
PC $200. Nev, VK4CV (0
3205 2121. Licensed am
teurs only.
- **Various**: Radiotro
Designers Handbook 4th e
$50. Drakes Encycopaedi
Electronics 1933 $35. GD
Leader $80. 3000 valve
$700. Peter Hadgraft, 1
Paxton Street, Hollan
Park, QLD 4121 or phon
(07) 3834 2578
- **Wanted**: Instructio
sheets for Hy-Gai
14/18AVQ vert. Will pay a
copy costs. VK4AE (0
5491 8997
- **Wanted**: TenTec Centu
21 CW xcvr also Icom I
728 xcvr plus will apprec
ate quantities of copp
wire (up to 2000m) for larg
HF array. Doc, VK4CM
(076) 85 2167
- **Wanted**: YD-148 desk m
also CW key suit learner
not a cheap key, pref
something to use later
with xcvr! Rusty, (077)
7876
- **Yaesu** FT-736R mult
band all-mode VHF/U
base station with 70cm/2
fitted. With optional F
232C computer contr
interface and duplex
$2000 **PacComm** Spirit
9600 baud TNC $250. **Al**
B/W hand-held comput
scanner $50. Andre
VK4TEC (07) 3359 9082

VK5 AREA

- **Wanted**: Kenwood T
680S HF & 6m xcvr wi
either power supply or li
ear amp. Stef, VK5HSX (0
8382 3521 or 015 69 47
anytime

VK6 AREA

- **Wanted**: Icom IC-2KL li
ear amplifier; Icom AT-5
ATU, Icom IC-275 or IC-2

..CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

New CB User Directory

Wanted: CB radio operators for the **Australian CB Call Sign & QSL Book**. Send self-addressed envelope to Derrick Sykes, PO Box 1566, Tamworth NSW 2340

l-mode 2m transceivers.
lust be in 100 per cent
kg cond. Tony, VK6CV
9) 437 1959

Wanted: Kenwood DG-5
splay unit. Peter, VK6NTA
99) 49 2182 anytime

VK7 AREA

AEA PK-88 TNC with
anual & cable VGC $150.
ervyn VK7EKA (03) 6324
739

Wanted: Satellite rcvr, B-
AC, in GC. Shane,
K7KHZ (03) 6473 4256

Yaesu FT-4700 2m/70cm
ual-band FM mobile,
5/35W output, with sepa-
tion kit, manuals & cables
c $600. Clayton, VK7HCR
18 12 0633 or (03) 6228
143

Scanners and comms receivers

Icom IC-R7100 25-
)00MHz comms rcvr, with
ox, cables manual etc EC
1900. John (03) 6433 3256

Philips AE 3625/00 SW
vr, digital, 15 bands, inst
anual, SW hndbk, new
140. Harry, VK3AXJ (03)
302 5704

Reaslistic PRO-2006
)0ch scanner with hndbk
300. **Sony** ICF-20001D
vr, AM/FM, airband, with
ndbk & accss. David, (09)
27 1925

Scanner users:
ewcastle local scanner &
formation guides. As
entioned in Russell
yant's *Scanning Secrets*
adio & Communications
ecember 1996 issue. $24.
rite to Garry Luxton, PO
ox 132, Waratah, NSW
298 or phone (049) 68
259 for more information.

Wanted: 3BZ parts to
omplete restoration also
o 11 wireless set parts
eeded. **Also** looking for
alve rcvrs eg Collins, Marconi, Hallicrafters, Hammarlund, AR-7, STC etc. John, (02) 9525 8901

- **Wanted**: Drake SPR-4 comms rcvr. Reas price paid. Martin (03) 6331 8705
- **Wanted**: Icom IC-R7000 rcvr or sim in GWC. Jim, VK4ASW (071) 25 1831 anytime
- **Wanted**: info to adjust Kenwood TR-2000 digital display, also seek VC-10 VHF adaptor for R-2000. Graeme Potter, 2 Marloo Rd, Greenmont, WA 6056 or phone (09) 294 1892
- **Wanted**: manual or copy of manual for AX-190 rcvr. Will pay all costs this end. Colin (07) 5495 5501

CBs

- **GME Electrophone** 11amp regulated power supply. As new $125. Hank, VK5NCA (08) 8272 7435
- **GME Electrophone** TX-4000 UHF CB, only 12mths old, with manuals $340 ono. Andrew (03) 5443 7204
- **HyGain** 27MHz base, AM/SSB, ANL, NS, power supply, 18ft antenna. **Also** 40ch AM hand-held. All GWC. Daniel (076) 22 3593
- **Philips** 650-SD UHF CB also 12dB gain base antenna. Will swap for desktop scanner. Lyle (079) 39 4392
- **Royce** TS-133 UHF CB with porta pack & batt chrgr $250. Chris, Ph/fax (06) 253 3605
- **Scorpion** base station 40ch $150, PC. Lloyd, VK3HLD (03) 5986 5082
- **Turner** 5/8 wave 27MHz groundplane aerial. Has spent last 12yrs in storage! Ideal base station ant in GC. $100. Den, VK2DFU (02) 9728 6059

Please note that all phone numbers are after hours unless otherwise noted.

The mathematics of Christmas...

Included alongside the joy of Christmas, there always seems to be some form of down side. For some this might take the form of a financial matter — 'this year we must cut back'. For others it may be as simple as deciding which party to go to first. For yet others it might be the sadness of being parted. For all, though, Santa and his reindeer always provide the right image to lift any flagging spirits and cheer us all up. So spare a thought, if you would, for the problems that Santa may well experience on our behalf.

Now, most of us acknowledge the existence of Santa — but what of his reindeer? According to my reading of a range of available zoology books, no known species of reindeer can actually *fly*. But just how sure can I be of this? There are some 250,000 species of living organisms yet to be classified. Admittedly, most of these creatures of mystery are confined to insects and germs, but the enormity of that uncharted horde denies us the right to completely rule out the flying reindeer, a species which only Santa has ever officially utilised.

Let us continue this numerical approach somewhat further and analyse the difficulty of the task undertaken by Santa and the flyers. There are 3.78 billion people on the planet with a highly conservative 900 million child persons under the age of 18 included. So there is a certainly a lot for the team to do. To trim that figure, consider the fact that Santa does not appear to schedule activities for the Muslim, Hindu, Jewish and Buddhist children, reducing the workload to 15 per cent of the total. Assuming there are 2.33 children per household we still have 1.35 billion children occupying 40.5 million homes (if we presume each home contains one good child).

Assuming Santa travels East to West, he has 31 hours of Christmas to work with, thanks to the different time zones and the rotation of the Earth. This works out to 363.3 home visits per second. This is to say that for each Christian household with at least one 'good' child, Santa has 1/1000th of a second to park, hop out of the sleigh, jump down the chimney, fill the stockings, distribute the remaining presents under the tree, eat whatever snacks have been left, get back up the chimney, get back into the sleigh and move on to the next house.

Assuming that each of these 40.5 million stops are evenly distributed around the Earth (which of course we know to be false) we are now talking about 1.29 km per household, a total trip of 125.3 million kilometres, not counting stops to do what most of us must do at lest once every five hours, plus stops for food and water. This means that Santa's sleigh is moving at 1079 kilometres per second, 3,000 times the speed of sound. For purposes of comparison, the fastest man-made vehicle, the Ulysses space probe, moves at a pedestrian 73.2 kilometres per second. At the risk of seeming cynical, a conventional ground-based reindeer can run at a top speed of only 22.5 kilometres per hour — and only then for short bursts.

The payload on Santa's sleigh adds another interesting element. Assuming that each child gets nothing more than a medium-sized Lego set (1 kilogram), the sleigh is carrying 135,000 tonnes, not counting Santa, who is invariably described as overweight. On land, conventional reindeer can pull no more than 1700 kilograms. Even granting that the conventionally-stated 11 flying reindeer can pull 10 times this figure we cannot do the job with just the 11. We need an *extra* 794,106 reindeer. This increases the payload — not even counting the weight of the sleigh — to 70,000 tonnes. Again for comparison, this all adds up to four times the weight of the cruise liner Queen Elizabeth II.

70,000 tonnes travelling at 1080 kilometres per second creates enormous air turbulence and will assuredly heat the reindeer up in the same fashion as a spacecraft re-entering the Earth's atmosphere. The lead pair of reindeer will absorb 14.3 quintillion joules of energy — per second — each. In short, each will burst into flame almost instantaneously exposing the reindeer behind. Applying this recursively, the entire reindeer team will be vaporised within 4.26 thousandths of a second, and will create deafening sonic booms in their wake.

Our rotund friend Santa, meanwhile, will be subjected to centrifugal forces some 17,500 times greater than gravity. A 100 kilogram Santa (which seems ludicrously slim) would be pinned to the back of his sleigh by 4,315,015 newtons of force.

In conclusion — If Santa ever intends to deliver presents on Christmas Eve, he is doomed.

AMATEUR REPEATER LIST

The data in this listing has been very kindly supplied to us by the federal WIA. If you think a listing for your area is inaccurate, please let us know. Write to **Repeater Lists**, R&C Magazine, Box 1 Yarra Road, Wonga Park, Victoria 3115, or via Internet email to **vk3ce@tbsa.com.au**. We'll also pass your information on to the WIA.

Sorry, but space limitations prevent us from listing more than input and output frequencies, callsign and location.

10 & 6 METRE VOICE REPEATERS

Out MHz	Input MHz	Call	Location
29.620	29.520	VK2RUW	Knights Hill
29.620	29.520	VK5RLZ	Elizabeth Sth
29.640	29.540	VK2RHF	Wagga Wagga
29.640	29.540	VK3RHF	Mt Dandenong
29.640	29.540	VK6RHF	Roleystone
29.660	29.560	VK4RCC	Camp Mountain
53.550	52.550	VK2RAY	Black Range Trig
53.550	52.550	VK2RIC	Parrots Nest
53.550	52.550	VK2RSJ	Kurrajong
53.550	52.550	VK3RMH	Wattle Glen
53.575	52.575	VK2RJB	Sanctuary Point
53.575	52.575	VK2RTM	Tamworth
53.575	52.575	VK3RDD	Cockatoo
53.600	52.600	VK3RMR	Mt Lookout
53.625	52.625	VK2RSN	Mt Sugarloaf
53.675	52.675	VK2RMB	Terrey Hills
53.675	52.675	VK3RTN	Lake Mountain
53.725	52.725	VK4RGA	Amy's Peak
53.725	52.725	VK4RIK	Mt Haren
53.725	52.725	VK4RLB	Logan City
53.750	52.750	VK5RDX	Chandlers Hill
53.775	52.775	VK4RAF	Black Mountain
53.775	52.775	VK4RRC	Mount Mee
53.800	52.800	VK6RTH	Tic Hill
53.825	52.825	VK7RMD	Mt Duncan
53.850	52.850	VK2RWI	Dural
53.900	52.900	VK3RMS	Olinda
53.950	52.950	VK4RBL	Bardon
53.975	52.975	VK3RGM	Mt Buller
53.975	52.975	VK4RBR	Mount Gravatt

TWO METRE VOICE REPEATERS

ACT and New South Wales

Out MHz	Input MHz	Call	Location
146.625	146.025	VK2RBB	Byron Bay
146.625	146.025	VK2RLD	The Oaks
146.650	146.050	VK2RCH	Mount Coramba
146.650	146.050	VK2RDX	Mount Bindo
146.650	146.050	VK2RMI	Terry Hie Hie
146.675	146.075	VK2RCV	South Grafton
146.675	146.075	VK2RTY	Blacktown
146.700	146.100	VK2RAO	Mount Canobolas
146.700	146.100	VK2RMU	Little Forest
146.700	146.100	VK2RPM	Middle Brother
146.725	146.125	VK2RAG	Somersby
146.750	146.150	VK2RPC	Kurrajong 123Hz tone
146.750	146.150	VK2RFS	Mount Mumbulla
146.750	146.150	VK2RTM	Mount Crawney
146.750	146.150	VK2RWG	Mount Flackney
146.775	146.175	VK2RTZ	Sugarloaf Ranges
146.800	146.200	VK2RCC	Needle Mountain
146.800	146.200	VK2RIC	Parrots Nest
146.800	146.200	VK2RLE	Heathcote
146.800	146.200	VK2RTD	Kendall Trig
146.825	146.225	VK2RET	Bundook Mountain
146.825	146.225	VK2RHR	High Range
146.850	146.250	VK2RAB	Mount Kaputar
146.850	146.250	VK2RMP	Maddens Plains
146.850	146.250	VK2RGF	Mount Bingar
146.875	146.275	VK2RMB	Terrey Hills
146.900	146.300	VK1RAC	Black Hill
146.900	146.300	VK2RAN	Mount Sugarloaf
146.900	146.300	VK2RRT	Boona Mountain
146.925	146.325	VK2RGR	North Ryde
146.950	146.350	VK1RGI	Mount Ginini
146.950	146.350	VK2RNE	Mount Rumbee
146.975	146.375	VK2RAN	Mt Sugarloaf
146.975	146.375	VK2RIS	Saddleback Mountain
146.975	146.375	VK2RMS	Bald Hill
147.000	146.400	VK2RBH	Broken Hill
147.000	146.400	VK2RWI	Dural
147.025	147.625	VK2ROT	Paddington
147.050	147.650	VK2RBM	Mount Druitt
147.100	147.700	VK2RGL	Cabbage Tree Mt
147.100	147.700	VK2RWM	Grenfell
147.100	147.700	VK2RZL	Mount Arthur
147.125	147.725	VK2RER	Bulloc Bulloc Hill
147.150	147.750	VK2RWS	Chatswood
147.200	147.800	VK2RHW	Mount Woolooma
147.200	147.800	VK2RSD	Mount Cambewarra
147.200	147.800	VK2RWH	Warners Bay
147.200	147.800	VK2R??	Mulwala
147.225	147.825	VK2RST	Lane Cove
147.225	147.825	VK2RYL	Bald Mountain
147.250	147.850	VK2RNS	Asquith
147.300	147.900	VK2RTS	Winmallee
147.925	147.325	VK2RGN	Mount Gray

Victoria

Out MHz	Input MHz	Call	Location
146.650	146.050	VK3REG	Donald's Knob
146.650	146.050	VK3RGV	Mount Wombat
146.700	146.100	VK3RML	Ferny Creek
146.700	146.100	VK3RNC	Mount Mittamatite
146.700	146.100	VK3RON	Ouyen
146.750	146.150	VK3RBA	Mount Buninyong
146.775	146.175	VK3RAG	Rennies Hill
146.800	146.200	VK3RLV	Mount Tassie
146.800	146.200	VK3RMA	Mildura
146.850	146.250	VK3RMN	Kinglake
146.875	146.275	VK3RRM	Mount Bullengarook
146.900	146.300	VK3RBS	Smeaton Hill
146.900	146.300	VK3REB	Mount Nowa Nowa
146.900	146.300	VK3RSH	Swan Hill
146.950	146.350	VK3RWZ	Mount William
147.000	146.400	VK3RGL	Mount Anakie
147.000	146.400	VK3RNE	Mount Big Ben
147.025	147.625	VK3RGS	Mount Fatigue
147.025	147.625	VK3RMK	Mount Kerang
147.050	147.650	VK3RHO	Mount Hotham
147.050	147.650	VK3RVL	Robinvale
147.050	147.650	VK3RWL	Mount Warrnambool
147.075	147.675	VK3RCR	Heathmont
147.100	147.700	VK3RPB	Mount Porepunkah
147.100	147.700	VK3RSG	Bass Hill
147.125	147.725	VK3RGC	Montpelier
147.150	147.750	VK3RCV	Mount Alexander
147.175	147.775	VK3REC	Olinda
147.225	147.825	VK3RWG	Mount Baw Baw
147.250	147.850	VK3RMM	Mount Macedon
147.275	147.875	VK3ROW	Beech Forest

Queensland

Out MHz	Input MHz	Call	Location
146.625	146.025	VK4RGT	Maurice Hill
146.625	146.025	VK4RGY	Mount Boulder
146.650	146.050	VK4ROM	Grafton Range
146.675	146.075	VK4RET	Mount Kiangrow
146.675	146.075	VK4RTA	Longlands Gap
146.700	146.100	VK4RAR	Mount Archer
146.700	146.100	VK4RAT	Mount Stuart
146.700	146.100	VK4RGC	Springbrook
146.700	146.100	VK4RMI	Four Mile Hill
146.725	146.125	VK4RSB	Mount Gordon
146.750	146.150	VK4RDD	Mount Lofty
146.800	146.200	VK4RBU	Mt Goonaneman
146.800	146.200	VK4RTI	Thursday Island
146.800	146.200	VK4RWP	Weipa
146.825	146.225	VK4RCR	Dalveen
146.850	146.250	VK4RHT	Hann Tableland
146.850	146.250	VK4RLE	Longreach
146.850	146.250	VK4RSC	Buderim
146.875	146.275	VK4RBS	Alexandra Hills
146.875	146.275	VK4RTB	Mount Tabletop
146.900	146.300	VK4RAI	Mt Stradbroke
146.900	146.300	VK4RGA	Amy's Peak
146.925	146.325	VK4RHR	Hodgson Range
146.925	146.325	VK4RRC	Mount Mee
146.950	146.350	VK4RBD	Blackdown T'ld
146.950	146.350	VK4RCA	Bellenden Ker
146.950	146.350	VK4RGG	Nerang
146.975	146.375	VK4RRR	Blue Mountain
147.000	146.400	VK4RBN	Mount Glorious
147.000	146.400	VK4RMK	Black Mountain
147.150	147.750	VK4RAG	Spring Hill
147.175	147.775	VK4RWM	Ipswich
147.300	147.900	VK4RQT	Mount Glorious
147.325	147.925	VK4REP	Middlemount
147.350	147.950	VK4REP	Middlemount
147.350	147.950	VK4RII	Mt Inkerman Burc
147.375	147.975	VK4REP	Middlemount
147.375	147.975	VK4RMO	Coominglah Mont
147.375	147.975	VK4RWB	Mount Bertha
147.625	147.025	VK4RMV	Westwood Range
147.650	147.050	VK4RBT	Mount Cotton
147.675	147.075	VK4RBT	Mount Cotton
147.800	147.200	VK4RBG	Bundaberg
147.825	147.225	VK4REG	Kallangur Hts
147.850	147.250	VK4RCB	Mount Devlin
147.950	147.350	VK4RLR	Rockhampton

South Australia

Out MHz	Input MHz	Call	Location
146.625	146.025	VK5RLZ	Elizabeth South
146.650	146.050	VK5RNC	Naracoorte
146.675	146.075	VK5RSV	Willunga
146.700	146.100	VK5RMN	The Bluff
146.750	146.150	VK5RAC	Pillaworta Hill
146.800	146.200	VK5REP	Coolanie
146.825	146.225	VK5RBV	Angaston
146.850	146.250	VK5RHO	Houghton
146.900	146.300	VK5RMG	The Bluff
146.925	146.325	VK5RLH	Bumbunga Hill
147.000	146.400	VK5RAD	Crafers
147.825	147.825	VK5RBG	Roseworthy
147.875	147.275	VK5RAE	Mount Arden
147.925	147.325	VK5RLD	Berri
147.925	438.575	VK5RLD	Berri

Vestern Australia

46.625	146.025	VK6RNC	Walliston
46.650	146.050	VK6RBY	Bunbury
46.675	146.075	VK6RNR	Hudgejah
46.675	146.075	VK6RCA	Whim Creek
46.700	146.100	VK6RAP	Roleystone
46.700	146.100	VK6RWR	Wickham
46.725	146.125	VK6RAL	Albany
46.750	146.150	VK6RAT	Forbs Hill
46.750	146.150	VK6RLM	Lesmurdie
46.750	146.150	VK6RES	Esperance
46.800	146.200	VK6RTH	Tic Hill
46.800	146.200	VK6RWP	Karratha
46.825	146.225	VK6RAA	Mt Barker
46.850	146.250	VK6REX	Exmouth
46.850	146.250	VK6RKB	Kambalda
46.850	146.250	VK6RLM	Lesmurdie
46.875	146.275	VK6RSR	O'Connor
46.900	146.300	VK6RMW	Mount William
46.950	146.350	VK6RPD	Fremantle
46.950	146.350	VK6RSG	Goldsworthy
47.000	146.400	VK6RAW	Fairfield
47.000	146.400	VK6RAK	Kalgoorlie
47.000	146.400	VK6RGN	Geraldton
47.000	146.400	VK6RNW	Port Hedland
47.050	147.650	VK6RTY	Roleystone
47.100	147.700	VK6RLK	Chidlow
47.100	147.700	VK6RWC	Millendon
47.125	147.725	VK6RHB	Gin Gin
47.150	147.750	VK6RMJ	Manjimup
47.200	147.800	VK6RCT	Yandan Hill
47.250	147.850	VK6RMS	Mount Saddleback
47.275	147.875	VK6RHW	Hoddywell
47.275	147.875	VK6RWM	Wyalkatchem
47.325	147.925	VK6RKL	Nareling Hill
47.350	147.950	VK6RBN	Chapman Hill

asmania

46.625	146.025	VK7RMD	Mount Duncan
46.650	146.050	VK7RAF	Mount Faulkner
46.700	146.100	VK7RHT	Mount Wellington
46.725	146.125	VK7?	Tower Hill, St Marys
46.750	146.150	VK7RNW	Lonah
46.900	146.300	VK7REC	Snow Hill
47.000	146.400	VK7RAA	Mount Barrow
47.075	147.675	VK7RWC	Mount Read

lorthern Territory

46.650	146.050	VK8RMS	Nhulunbuy
46.700	146.100	VK8RDA	Karama
46.950	146.350	VK8RCA	West Gap
47.000	146.400	VK8RTE	Noonamah

0 AND 23cm VOICE REPEATERS

CT and New South Wales

38.025	433.025	VK2RCH	Coffs Harbour
38.025	433.025	VK2RTK	S. Highlands
38.075	433.075	VK2RAG	Gosford-Wyong
38.125	433.125	VK2RMU	Milton
38.175	433.175	VK2RMB	Sydney
38.175	433.175	VK2RNT	Armidale
38.225	433.225	VK2RPW	Walcha
38.225	433.225	VK2RUW	Illawarra
38.275	433.275	VK2RWS	Chatswood WICEN
38.325	433.325	VK2REE	Taree
38.325	433.325	VK2RGN	Goulburn
38.325	433.325	VK2RWM	Grenfell
38.375	433.375	VK1RIR	Canberra
38.375	433.375	VK2RUT	Sydney West
38.425	433.425	VK2RCN	Oxley Region
38.425	433.425	VK2RUH	Hurstville
38.475	433.475	VK2RRS	Chatswood
38.525	433.525	VK1RGI	Mt Ginini
38.525	433.525	VK2RPM	Port Macquarie
38.525	433.525	VK2RWI	Dural
438.575	433.575	VK2RAY	Albury
438.625	433.625	VK2RUM	Newcastle
438.675	433.675	VK2RAN	Newcastle
438.675	433.675	VK2RSC	Lismore / Casino
438.675	433.675	VK2RTW	Wagga
438.725	433.725	VK2RIL	Illawarra
439.275	434.275	VK2RSM	Saddleback Mountain
439.325	434.325	VK2RTY	Sydney RTTY
439.375	434.375	VK2RTM	Tamworth
439.425	434.425	VK2RCZ	Lalor Park
439.475	434.475	VK2ROT	Paddington
439.575	434.575	VK2RJB	Jervis Bay
439.575	434.575	VK2RMR	Mt Riverview
439.950	434.950	VK2RAG	Gosford
1281.100	1293.100	VK2RJB	Jervis Bay
1281.200	1293.200	VK2RGN	Goulburn
1281.200	1293.200	VK2RPW	Walcha
1281.400	1293.400	VK2RAG	Central Coast
1281.750	1293.750	VK2RWI	Dural

Victoria

438.025	433.025	VK3RCC	Melbourne City
438.075	433.075	VK3RMU	Mt St Leonard
438.175	433.175	VK3RUG	Eildon
438.225	433.225	VK3ROU	Melbourne
438.275	433.275	VK3RWE	WICEN portable
438.375	433.375	VK3RGU	Carrajung
438.425	433.425	VK3RCU	Bendigo
438.475	433.475	VK3RBU	Ballarat
438.525	433.525	VK3RAD	Mitcham
438.525	433.525	VK3RNU	Wangaratta
438.525	433.525	VK3RRU	Merbein
438.625	433.625	VK3RWI	WICEN portable
438.675	433.675	VK3RWU	Grampians
438.700	433.700	VK3REO	Clarkefield
438.750	433.750	VK3RHF	Melbourne
439.275	434.275	VK3RMM	Melbourne WICEN
439.375	434.375	VK3RSE	Melbourne
439.425	434.425	VK3RNE	Wodonga
439.425	434.425	VK3RSU	Chesney Vale
439.575	434.575	VK3RGL	Geelong
439.625	434.625	VK3RDK	Bayswater
439.675	434.675	VK3RZU	Mt Buller
439.725	434.725	VK3RPU	Arthur's Seat
439.775	434.775	VK3RGV	Goulburn Valley
439.875	434.875	VK3RDU	Shepparton
1273.400	1293.400	VK3RDK	The Basin

Queensland

438.025	433.025	VK4RMO	Monto
438.025	433.025	VK4RTQ	Mt Tambourine
438.075	433.075	VK4RSC	Buderim
438.225	433.225	VK4RAT	Townsville
438.225	433.225	VK4RDG	Central Qld Coast
438.225	433.225	VK4RGC	Gold Coast
438.325	433.325	VK4RCC	Redcliffe
438.325	433.325	VK4RRC	Wamuran
438.375	433.375	VK4RWM	Ipswich
438.425	433.425	VK4RMU	Mackay
438.475	433.475	VK4RXX	Brisbane
438.500	433.500	VK4RHR	Clermont
438.500	433.500	VK4RXG	Brisbane
438.525	433.525	VK4RBC	Brisbane
438.625	433.625	VK4RAG	Brisbane
438.625	433.625	VK4RWI	WICEN portable
438.700	433.700	VK4RET	Dalby
438.775	433.775	VK4RBU	Bundaberg
438.825	433.825	VK4RGY	Gympie
438.875	433.875	VK4RMC	Gympie
438.950	433.950	VK4RBA	Redbank
439.275	434.275	VK4RDU	Toowoomba
439.350	434.350	VK4RIK	Cairns
439.900	434.900	VK4REX	Maleny
439.950	434.950	VK4RIY	Toowoomba
1281.650	1293.650	VK4REX	Maleny

South Australia

438.075	433.075	VK5RSC	Adelaide Sth
438.325	433.325	VK5ROH	Mt Gambier
438.425	433.425	VK5RBV	Angaston
438.475	433.475	VK5RLZ	Elizabeth
438.525	433.525	VK5RAD	Crafers
438.525	433.525	VK5RVP	Adelaide
1281.550	1293.550	VK5RLZ	Elizabeth
1293.250	1281.250	VK5RWH	Adelaide

Western Australia

438.225	433.225	VK6RTH	Perth
438.525	433.525	VK6RMS	Boddington
438.525	433.525	VK6RUF	Perth
438.575	433.575	VK6RFH	Perth
438.675	433.675	VK6RBN	Busselton
439.500	434.500	VK6RFI	Perth
439.875	434.875	VK6RWL	Perth

Tasmania

438.500	433.500	VK7RIN	Barren Tier
438.525	433.525	VK7RAH	Portable
438.550	433.550	VK7RAB	Mt Arthur
438.600	433.600	VK7RNW	Lonah
438.600	433.600	VK7RTC	Hobart
438.650	433.650	VK7RAC	Table Cape

Northern Territory

438.275	433.275	VK8RDU	Darwin
438.525	433.525	VK8RIT	Alice Springs

ATV REPEATERS

ACT and New South Wales

426.250	444.250	VK2RTW	Wagga
444.250	1250.000	VK2RWI	Dural
579.250	426.250	VK2RTS	Blue Mountains
1250.000	444.250	VK2RTS	Blue Mountains
1253.250	444.250	VK2RTS	Blue Mountains
444.250	426.250	VK2RTG	Gosford
579.250	444.250	VK2RTV	Lane Cove
1250.000	426.250	VK2RAG	Gosford
1250.000	426.250	VK2RFM	Oakdale
1250.000	444.250	VK2RFM	Oakdale

Victoria

444.250	426.250	VK3REX	Swan Hill
426.250	444.250	VK3RMZ	Bendigo
579.250	444.250	VK3RNE	Wodonga
579.250	444.250	VK3RTV	Melbourne

Queensland

444.250	1250.000	VK4RAT	Townsville
579.250	444.250	VK4RTV	Brisbane
1250.000	579.250	VK4RRP	SW Brisbane/Ipswich

South Australia

444.250	426.250	VK5RCN	Central North
579.250	426.250	VK5RTV	Adelaide
1286.250	444.250	VK5RWH	Adelaide
1250.000	444.250	VK5RWH	Adelaide
2372.000	1250.000	VK5RLZ	Elizabeth

Western Australia

444.250	426.250	VK6RTV	Edith Cowan Uni
444.250	1242.250	VK6RTV	Edith Cowan Uni
444.250	1250.000	VK6RTV	Edith Cowan Uni
579.250	444.250	VK6RTX	Perth
1242.250	444.250	VK6RTV	Edith Cowan Uni
1250.000	444.250	VK6RTV	Edith Cowan Uni

Tasmania

426.250	444.250	VK7RMD	Mt Duncan
579.250	444.250	VK7RAE	Kelcy Tiers

DICK SMITH ELECTRONICS

2m MIL-SPEC Tough Mobile Transceivers

Have a look at these 2 new models from Yaesu

FT-2500M 2m Heavy-Duty Transceiver

Built tough to take the rough stuff. The FT-2500M meets US MIL-SPEC 810c for shock and vibration so it'll provide years of reliable mobile operation. It sports a new easy-to-operate front panel design that has rubber coated knobs to keep the dust out. There is also a huge 'Omni-Glow' LCD screen that is teamed up with a one-piece diecast chassis to set the FT-2500M apart from all other 2m mobiles.

For improved front-end performance, Yaesu's exclusive 3-stage Advanced Track Tuning feature and dual-FET mixer reduce overloads from strong signals while providing excellent sensitivity and wide-band receive operation.

Also includes:

- 31 tuneable memories
- Inbuilt CTCSS encoder
- 7 selectable tuning steps
- Various scanning modes
- MH-26 hand microphone
- Mobile bracket and DC power lead.

Specifications:

Frequency range:	Tx 144-148MHz Rx 140-174MHz
Output power:	50W, 25W, 5W
Sensitivity:	Better than 0.2uV for 12dB SINAD
Dimensions:	160 x 50 x 180mm (WHD)

Cat D-3632

SAVE $70

$629

YAESU

2 YEAR WARRANTY

FT-3000M 70W 2m Mobile

An amazing new 2m mobile transceiver with up to 70W RF output. Rock solid with MIL-STD - 810C shock and vibration resistance. The FT-3000M also has wide band receiver coverage (110-180 and 300-520MHz), a dual band or dual in-band receiver facility and 1200/9600 baud Packet socket. Up front it has an impressive back-lit alphanumeric LCD screen. The FT-3000M has a total of 81 memories, as well as a Spectrum Scope mode that allows you to view activity above and below the current operating frequency, or among six programmed memories. A programming menu holds over 50 transceiver settings for easy "set and forget" access, and includes a scrolling text Help Guide. Twin fans provide optimum cooling during long transmissions for greater component reliability. The FT-3000M is supplied with an MH-42A6J hand microphone, DC power lead, and instruction manual.

Specifications:

Frequency range:	Tx 144-148MHz, Rx 110-180, 300-520, 800-824, 849-869, 894-999MHz
RF Output:	70, 50, 25, 10W
Sensitivity:	0.2uV (main Rx), 0.25uV (sub Rx)
Dimensions:	140 x 40 x 180mm (WHD)

Cat D-3700

$799

2 YEAR WARRANTY

YAESU

For further information, orders or the location of your nearest store call:
1300 366 644 (Local Call Charge) Or Fax: (02) 805 1986

Tough, Compact, Economical

Yaesu FT-50R
2m/70cm Handheld

For the foremost in top performing, durable, and economical dualband handhelds, there's now only one choice, Yaesu's amazing new FT-50R!

Manufactured to rigid commercial grade standards, the FT-50R provides 2m and 70cm band transceive coverage plus an amazingly wide receiver range (76-200, 300-540, 590-999MHz*), all in a compact package with water resistant construction that's tough enough to meet the USA MIL-STD-810 rating for shock and vibration resistance, yet is easy to hold and use.

Measuring just 57 x 99 x 30mm (WHD) with the supplied FNB-40 650mA/H Nicad pack, the FT-50R provides 2.0w RF output on the 2m and 70cm bands as standard, and can provide up to 5.0w output when operated from a 12v source (optional Nicad battery or vehicle lead). It also provides 112 memory channels including two Home memories, an Alphanumeric display for channel naming (ie. repeater locations or callsigns) with Omni-glow backlighting, and CTCSS encode for accessing repeaters that require a tone input. Selectable AM/FM receive modes allow for greater flexibility during extended receive operation.

For ease of use, the FT-50R provides super loud speaker output, an Auto Range Transpond System to determine if you are in range of another ARTS equipped transceiver, a Dual-watch system for monitoring sub-band activity, and four Battery saver systems for longer operating times. A selectable LCD voltmeter also allows you to monitor battery performance under load so you can estimate remaining battery life. You can also use the FT-50R with the optional ADMS-1C Windows based PC software/interface to quickly program features or clone programming to other compatible Yaesu radios.

The FT-50R is tough, easy to use, and one of the most economical dualband handhelds you can buy. There's now only one choice, the FT-50R from Yaesu.

(* Cellular blocked)

D-3655

YAESU

$599

2 year warranty

DICK SMITH ELECTRONICS

B 2659

OUR WIDE BAND RECEIVER RANGE IS NOW EVEN WIDER.

Our wide band receivers give you the world. Starting with our new IC R10, an exciting upgrade of the popular IC-R1 which led the way in handheld receivers. The IC-R10 has a wide frequency coverage of 0.5 MHz to 1300 MHz and is an all mode (FM, WFM, SSB, CW, AM) unit. Features such as a real-time bandscope function, making it easy to find busy frequencies, are firsts for handheld receivers. Our top of the range IC-R9000 covers 100 kHz - 1999.8 MHz in all modes and features Icom's unique CRT display, intelligent scan functions and an amazing 1000 memory channels, in a unit that delivers superb high frequency stability, even in the GHz range.

IC-R9000

IC-R8500

The IC-R8500 is another exciting newcomer with a frequency range of 0.1 to 2000 MHz, excellent frequency stability, and outstanding high receive sensitivity characteristics. With an RS-232C interface allowing direct connection to a PC the new IC-R8500 is truly a state-of-the-art communications receiver.

Our mobile IC-R100 is packed with features and covers the 100kHz - 1800 MHz range in AM, FM, and WFM modes with multi-function scanning and 100 memories with 20 scan edge channels. With the expanded Icom range of communications receivers... the world's radio signals have never sounded so good. Talk to your Icom dealer today for the full technical story.

IC-R100

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